TEST REPORT

Report Number: 14523778-E6V2

Applicant	:	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2847 (Parent Model) A3093, A3094, A3096 (Variant Model)
Brand	:	APPLE
FCC ID	:	BCG-E8431A (Parent Model) BCG-E8432A, BCG-E8433A, BCG-E8434A (Variant Model)
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E

Date Of Issue:
August 18, 2023

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	8/17/2023	Initial Issue	Francisco Guarnero
V2	8/18/2023	Address TCB questions section 6, 7, 9	Everardo Torres

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

EUT DESCRIPTION: SMARTPHONE

MODEL: A2847 (Parent Model)
A3093, A3094, A3096 (Variant Model)

BRAND: APPLE

SERIAL NUMBER: D0X6GW1QFL (Conducted)
LG2RMFJ661, GM66G6WQ4Q (Radiated)

SAMPLE RECEIPT DATE: FEDRUARY 20, 2023

DATE TESTED: MARCH 15, 2023 – AUGUST 18, 2023

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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Approved & Released For
UL Verification Services Inc. By:

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2. TEST RESULT SUMMARY

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2.
See Comment	26dB BW/99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (e)	6 dB BW	Complies	None.
15.407 (a) (1-4), (h) (1)	Output Power	Complies	None.
15.407 (a) (1-3, 5)	PSD	Complies	None.
15.209, 15.205, 15.407 (b)	Radiated Emissions	Complies	None.
15.207	AC Mains Conducted Emissions	Complies	None.

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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:
- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 662911 D01 v02r01
- FCC KDB 789033 D02 v02r01
- FCC KDB 644545 D03 v01
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{LAB}
Conducted Antenna Port Emission Measurement	1.94 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	0.450 dB (Peak), 1.3 dB (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.2%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

Uncertainty figures are valid to a confidence level of 95%.

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5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC, 802.15.4ab-NB and MSS technologies. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC.

The Model and FCC ID covered by this report includes:

Parent Model: A2847, FCC ID: BCG-E8431A

Variant Model: A3093, FCC ID: BCG-E8432A
A3094, FCC ID: BCG-E8433A
A3096, FCC ID: BCG-E8434A

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6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 1TX			
5180-5240	802.11a	Covered by 802.11n HT20 1TX	
5180-5240	802.11n HT20	19.47	88.51
5190-5230	802.11n HT40	19.95	98.86
5180-5240	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5190-5230	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5210	802.11ac VHT80	16.48	44.46
5180-5240	802.11ax HE20	19.48	88.72
5190-5230	802.11ax HE40	19.96	99.08
5210	802.11ax HE80	16.48	44.46
5.2 GHz band, 2TX			
5180-5240	802.11n HT20 CDD	19.41	87.30
5180-5240	802.11n HT20 SDM/STBC	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11n HT40 CDD	21.87	153.82
5190-5230	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5180-5240	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5190-5230	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5210	802.11ac VHT80 CDD	18.44	69.82
5210	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5180-5240	802.11ax HE20 CDD	19.42	87.50
5180-5240	802.11ax HE20 SDM	Covered by 802.11ax HE20 OFDMA	
5190-5230	802.11ax HE40 CDD	21.96	157.04
5190-5230	802.11ax HE40 SDM	Covered by 802.11ax HE40 OFDMA	
5210	802.11ax HE80 CDD	18.46	70.15
5210	802.11ax HE80 SDM	Covered by 802.11ax HE80 OFDMA	

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5.3 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 1TX			
5260 - 5320	802.11a	Covered by 802.11n HT20 1TX	
5260 - 5320	802.11n HT20	19.46	88.31
5270 - 5310	802.11n HT40	19.98	99.54
5260 - 5320	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5270 - 5310	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5290	802.11ac VHT80	16.98	49.89
5260 - 5320	802.11ax HE20	19.47	88.51
5270 - 5310	802.11ax HE40	19.95	98.86
5290	802.11ax HE80	16.92	49.20
5.3 GHz band, 2TX			
5260 - 5320	802.11n HT20 CDD	19.45	88.10
5260 - 5320	802.11n HT20 SDM/STBC	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11n HT40 CDD	21.94	156.31
5270 - 5310	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5260 - 5320	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5270 - 5310	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5290	802.11ac VHT80 CDD	19.46	88.31
5290	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5260 - 5320	802.11ax HE20 CDD	19.47	88.51
5260 - 5320	802.11ax HE20 SDM	Covered by 802.11ax HE20 OFDMA	
5270 - 5310	802.11ax HE40 CDD	21.94	156.31
5270 - 5310	802.11ax HE40 SDM	Covered by 802.11ax HE40 OFDMA	
5290	802.11ax HE80 CDD	18.95	78.52
5290	802.11ax HE80 SDM	Covered by 802.11ax HE80 OFDMA	

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5.6 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX			
5500-5720	802.11a	Covered by 802.11n HT20 1TX	
5500-5720	802.11n HT20	19.47	88.51
5510-5710	802.11n HT40	19.97	99.31
5500-5720	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5510-5710	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5530-5690	802.11ac VHT80	19.97	99.31
5500-5720	802.11ax HE20	19.48	88.72
5510-5710	802.11ax HE40	19.99	99.77
5530-5690	802.11ax HE80	19.96	99.08
5.6 GHz band, 2TX			
5500-5720	802.11n HT20 CDD	19.43	87.70
5500-5720	802.11n HT20 SDM/STBC	Covered by 802.11n HT20 2TX CDD	
5510-5710	802.11n HT40 CDD	21.95	156.68
5510-5710	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5500-5720	802.11ac VHT20 SDM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5510-5710	802.11ac VHT40 SDM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5530-5690	802.11ac VHT80 CDD	22.97	198.15
5530-5690	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5500-5720	802.11ax HE20 CDD	19.46	88.31
5500-5720	802.11ax HE20 SDM	Covered by 802.11ax HE20 OFDMA	
5510-5710	802.11ax HE40 CDD	21.96	157.04
5510-5710	802.11ax HE40 SDM	Covered by 802.11ax HE4 OFDMA	
5530-5690	802.11ax HE80 CDD	22.95	197.24
5530-5690	802.11ax HE80 SDM	Covered by 802.11ax HE80 OFDMA	

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5.8 GHz BAND (FCC)

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX			
5745-5825	802.11a	Covered by 802.11n HT20 1TX	
5745-5825	802.11n HT20	20.99	125.60
5755-5795	802.11n HT40	19.99	99.77
5745-5825	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5755-5795	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5775	802.11ac VHT80	19.99	99.77
5745-5825	802.11ax HE20	20.99	125.60
5755-5795	802.11ax HE40	19.99	99.77
5775	802.11ax HE80	19.97	99.31
5.8 GHz band, 2TX			
5745-5825	802.11n HT20 CDD	23.99	250.61
5745-5825	802.11n HT20 SDM/STBC	Covered by 802.11n HT20 2TX CDD	
5755-5795	802.11n HT40 CDD	22.99	199.07
5755-5795	802.11n HT40 SDM/STBC	Covered by 802.11n HT40 2TX CDD	
5745-5825	802.11ac VHT20 STM/STBC/CDD	Covered by 802.11n HT20 2TX CDD	
5755-5795	802.11ac VHT40 STM/STBC/CDD	Covered by 802.11n HT40 2TX CDD	
5775	802.11ac VHT80 CDD	22.99	199.07
5775	802.11ac VHT80 SDM/STBC	Covered by 802.11ac VHT80 2TX CDD	
5745-5825	802.11ax HE20 CDD	23.98	250.03
5745-5825	802.11ax HE20 SDM	Covered by 802.11ax HE20 OFDMA	
5755-5795	802.11ax HE40 CDD	22.92	195.88
5755-5795	802.11ax HE40 SDM	Covered by 802.11ax HE40 OFDMA	
5775	802.11ax HE80 CDD	22.96	197.70
5775	802.11ax HE80 SDM	Covered by 802.11ax HE80 OFDMA	

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6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:
The radio utilizes Cable loss is 3.3dB

Frequency Range (GHz)	ANT 6 (dBi)	ANT 5 (dBi)
5.2	-2.6	-1.0
5.3	-3.1	-1.4
5.6	-2.7	-1.9
5.8	-3.5	-1.9

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 20_97_1_4.

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6.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z on ANT 6, ANT 5 and 2TX. It was determined that Z (Portrait) orientation was the worst-case orientation for ANT 6, ANT 5, and for 2TX.

802.11n 2TX and 802.11ax 2TX modes were used to perform on radiated harmonic spurious final test to cover all SISO modes. Max power was tuned to maximum based on among all the modes. For testing purposes, radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-40GHz, and power line conducted emissions were performed with the EUT set at the 2TX CDD mode among the CDD/SDM modes with power setting equal or higher than FCC conducted SISO modes as worst-case scenario.

For Radiated band edge test all test modes have been investigated with power setting equal or higher than FCC conducted SISO modes as worst-case scenario.

Below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop. There were no emissions found below 30MHz within 20dB of the limit.

Simultaneous transmission with the Bluetooth was investigated, and no noticeable emission was found.

The output power and PSD for the IEEE 802.11 ax mode were investigated between all different tones, and baseline investigation SU mode had the highest output power and the lowest tone, RU26 on 5.2 and 5.8GHz band had the highest PSD readings, and for 5.3 and 5.6GHz band, RU106 are the worst case. Therefore, antenna port conducted and radiated tests were performed on 5.2 & 5.8 GHz band at SU, RU26 Tones and 5.3 and 5.6 GHz band at SU , RU106 tones.

With same power on Full RU and SU higher data rate, investigation were performed on both band edge to determine the worst case, and SU mode was determined to be the worst case.

Low data rate was used to test on antenna port conducted tests and radiated spurious emissions since it has the highest maximum power. For radiated band edge, the following are the worst-case data rates set for test:

802.11n HT20 mode: MCS7
802.11n HT40 mode: MCS7
802.11ac VHT80 mode: MCS9
802.11ax (5.2G & 5.8G bands): HE20/HE40/HE80 RU 26 Tones and SU mode: MCS11.
802.11ax (5.3G & 5.6G bands – Unsupported RU26): HE20/HE40/HE80 RU 106 Tones and SU mode: MCS11.

Note: In the Radiated Plots and emissions data, ANT0=ANT6 and ANT1=ANT 5.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop		Apple	Macbook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
Conducted Switch Box		UL	n/a	208281		N/A
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz		Pasternack Enterprises	PE7024-10	236358		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	SMA	1	SMA	Shielded	0.75	To spectrum Analyzer
2	Antenna	2	SMA	Un-shielded	0.2	To Conducted Switch Box
3	USB-C	1	USB-C	Shielded	1.0	N/A
4	AC	1	AC	Un-shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1	N/A

TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

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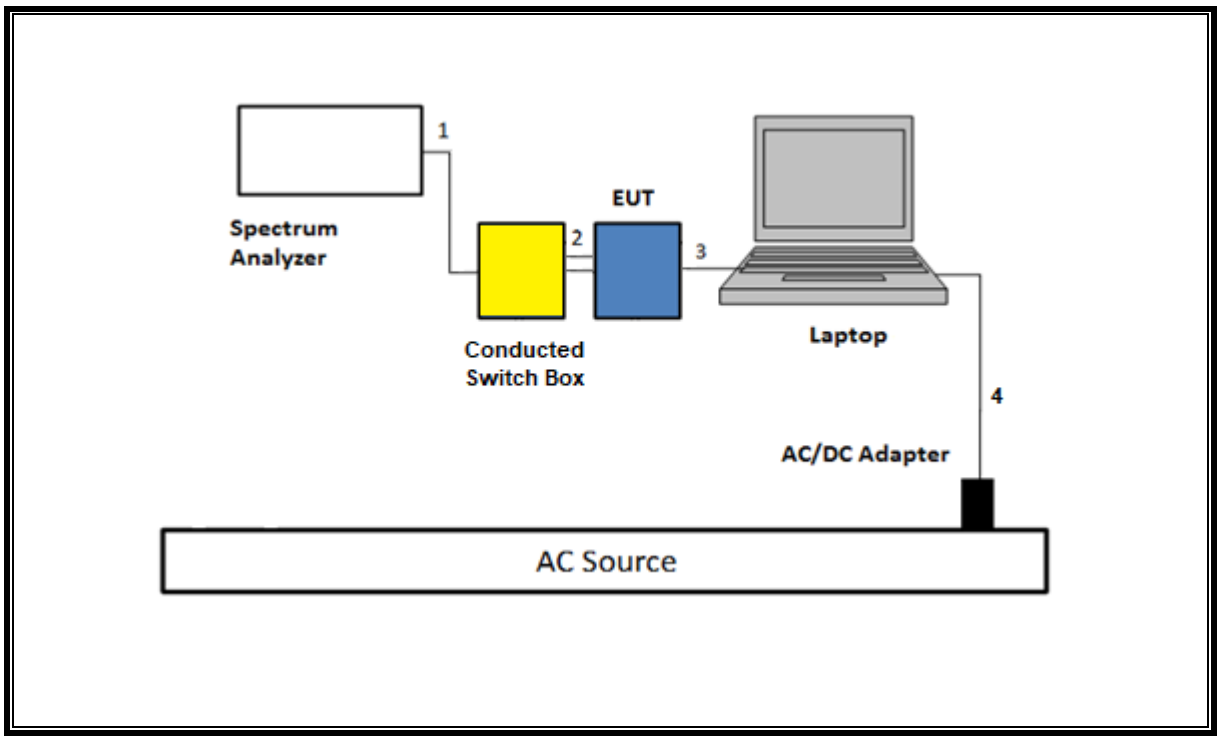
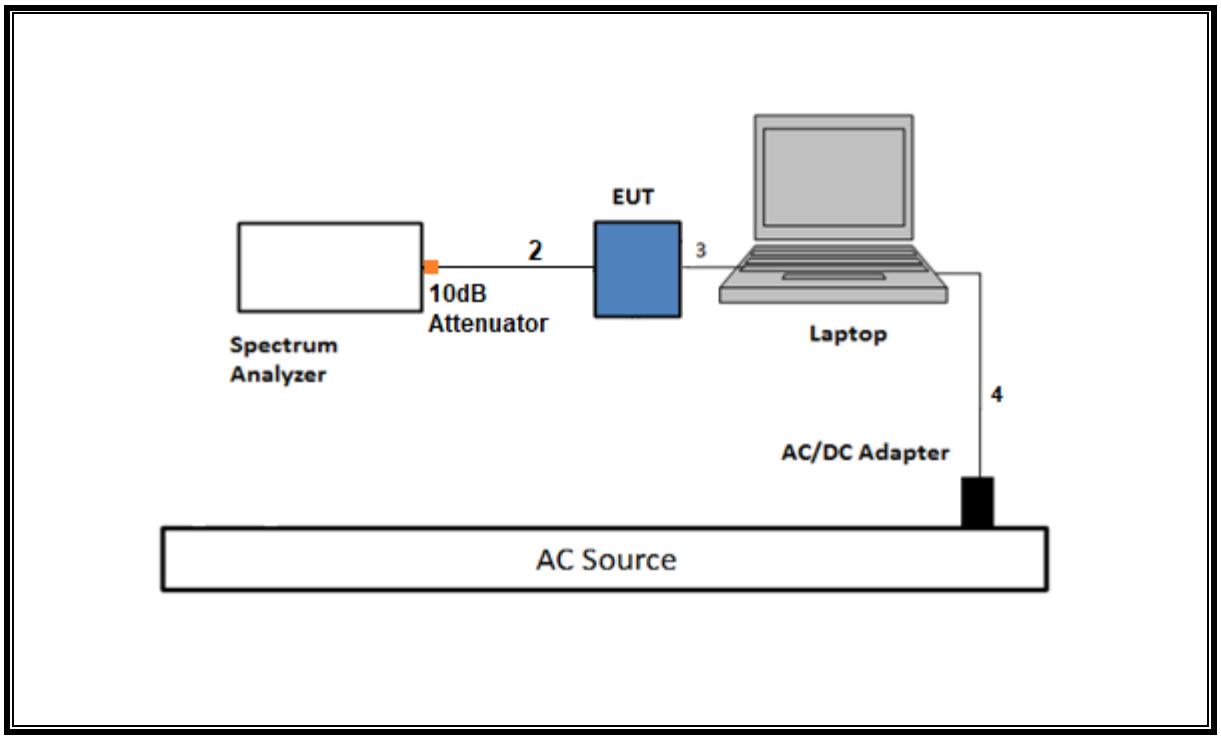
SETUP DIAGRAM FOR CONDUCTED TESTS





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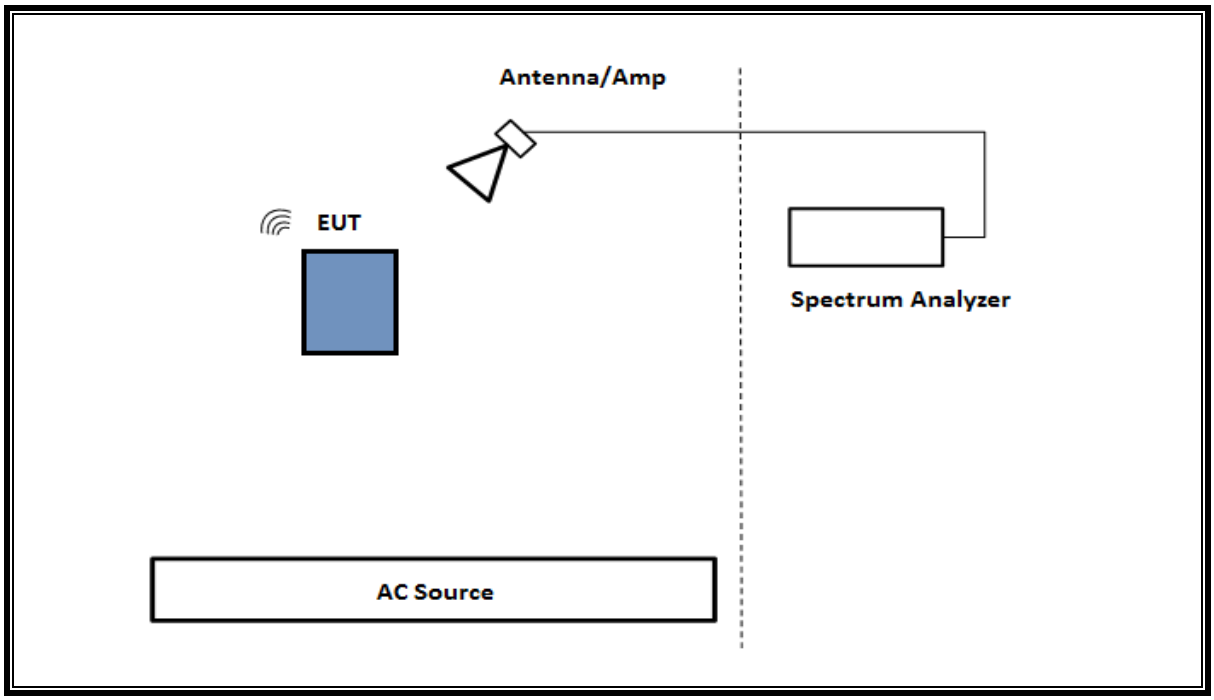
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



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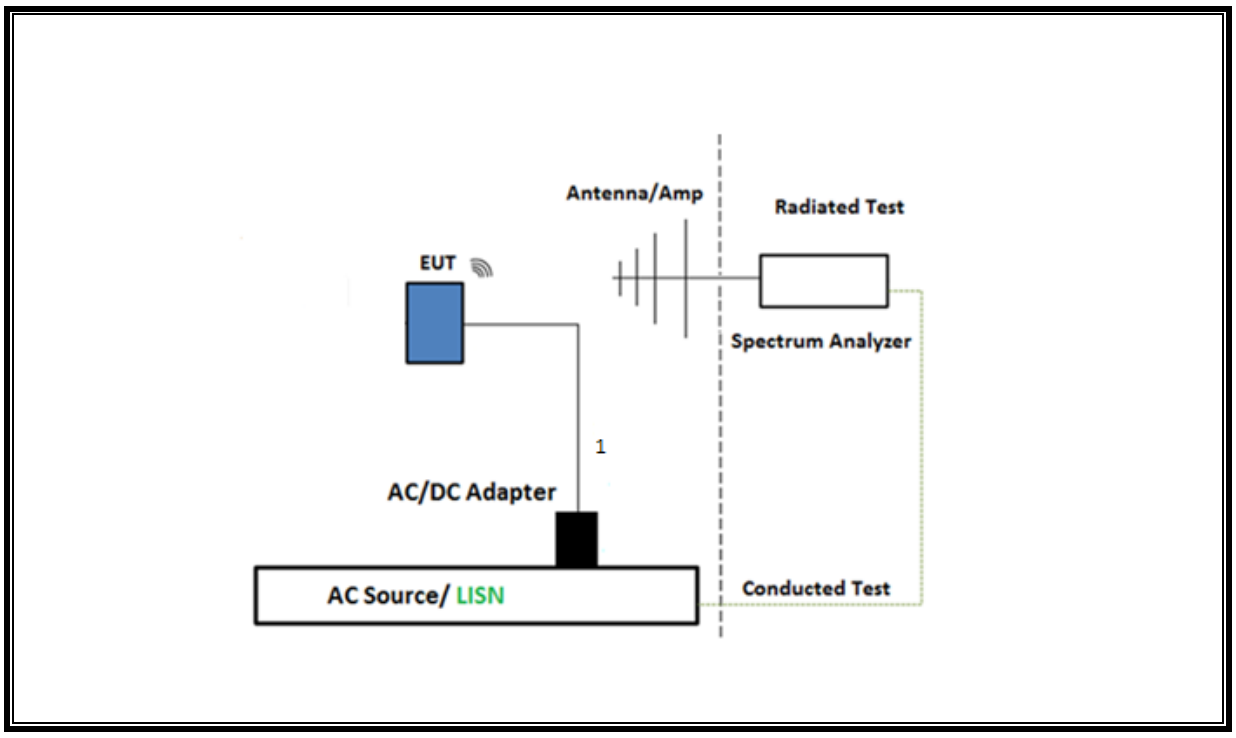
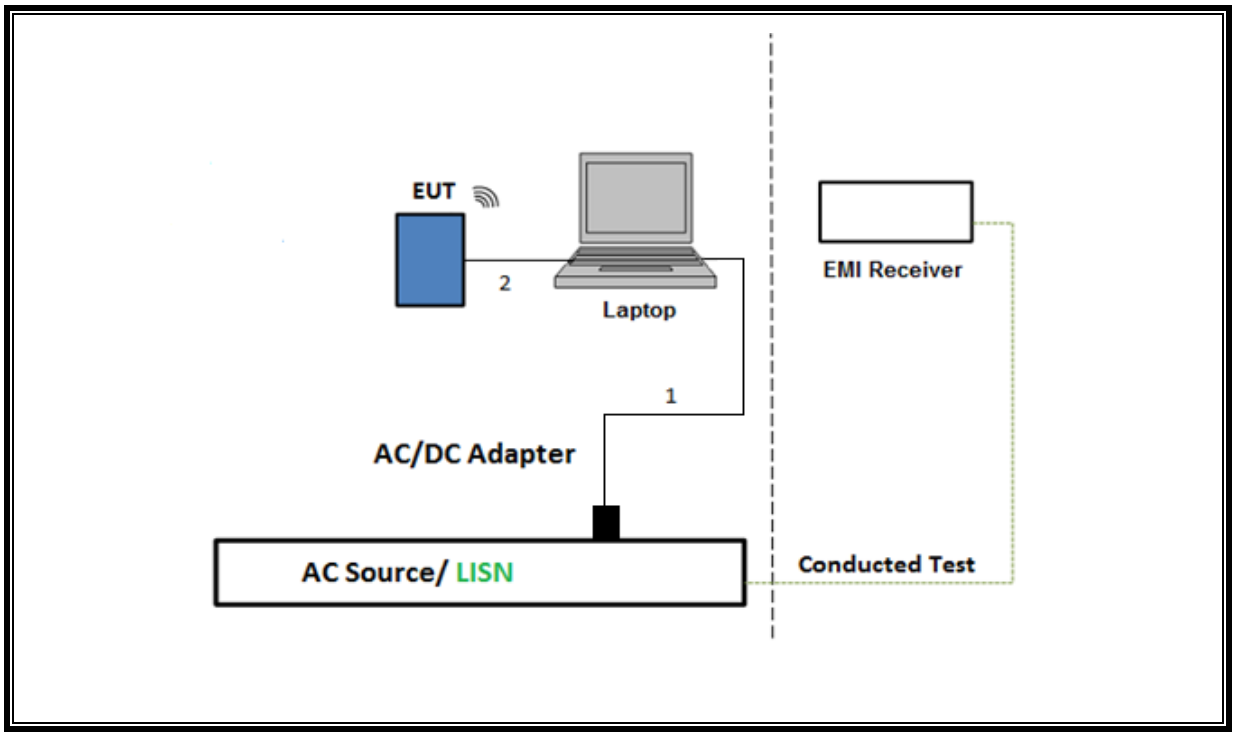
SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



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7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

6 dB Emission BW: KDB 789033 D02 v02r01, Section C.2

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

99% Occupied BW: KDB 789033 D02 v02r01, Section D.

Conducted Output Power: KDB 789033 D02 v02r01

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

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8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200896	02/28/2024	02/28/2023
RF Filter Box, 1-18GHz	UL-FR1	NA	173528	12/23/2023	12/23/2022
EMI TEST RECEIVER,	Rohde & Schwarz	ESW44	169937	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	206807	02/28/2024	02/28/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	230878	02/29/2024	02/29/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226672	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	04/19/2024	04/19/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179372	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	230300	01/12/2024	01/12/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231875	02/27/2024	02/27/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	170063	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84796	09/19/2023	09/19/2022
RF Filter Box, 1-18GHz	UL-FR1	N/A	171389	05/31/2024	05/31/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201497	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200784	01/31/2024	01/31/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231249	02/29/2024	02/29/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201499	02/29/2024	02/29/2023
*Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80404	08/08/2023	08/08/2022
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	216812	09/17/2023	9/17/2022
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	230548	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	81887	03/31/2024	03/31/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225474	03/31/2024	03/312023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201502	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	230299	01/12/2024	01/12/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225575	03/31/2024	03/31/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223461	08/29/2024	08/29/2023
*Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	80508	06/08/2023	06/08/2022
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	89831	08/10/2023	08/10/2022
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226671	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	226779	03/05/2024	03/05/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	226078	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226673	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	226780	03/29/2024	03/29/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	226079	05/01/2024	05/01/2023
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	199658	12/6/2023	12/6/2022
Antenna, Horn 26.5 to 40GHz	A.R.A.	MWH-2640/B	199660	12/6/2023	12/6/2022

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TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
*Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80402	7/05/2023	07/05/2022
*RF Filter Box, 1-18GHz	Miteq	UL-FR1	168534	07/31/2023	07/31/2022
EMI Test Receiver	Rohde & Schwarz	ESW44	201500	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	200897	03/31/2024	03/31/2023
RF Filter Box, 1-18GHz	UL-FR1	NA	168535	02/01/2024	02/01/2023
EMI Test Receiver	Rohde & Schwarz	ESW44	191429	02/29/2024	02/29/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	81886	03/31/2024	03/31/2023
RF Filter Box, 1-18GHz	UL-FR1	NA	168534	01/05/2024	01/05/2023
EMI Test Receiver	Rohde & Schwarz	ESW44	169927	02/29/2024	01/29/2023
*Antenna, Passive Loop 30Hz to 1MHz	Electro-Metrics	EM-6871	170013	07/28/2023	07/28/2022
*Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	07/28/2023	07/28/2022
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90756	01/31/2024	01/31/2023
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90389	01/31/2024	1/31/2023
*Conducted Switch Box	N/A	CSB	221008	06/21/2023	06/21/2022
Conducted Switch Box	N/A	CSB	208281	04/30/2024	04/30/2023
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236358	Verified/Characterized before use	
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236355	Verified/Characterized before use	
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Keysight Technologies Inc	E4440A	81311	02/29/2024	02/29/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80397	02/28/2024	02/28/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	85214	02/28/2024	02/28/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A-544	87738	02/28/2024	02/28/2023

AC Line Conducted					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	02/29/2024	02/29/2023
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	01/31/2024	01/31/2023
*Transient Limiter	TE	TBFL1	207996	07/15/2023	07/15/2022
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, Mar 6, 2020		
Conducted Software	UL	UL EMC	2020.2.26		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, February 21, 2020		

*Testing is completed before equipment expiration date.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
5GHz Band						
802.11n HT20 MCS0	1.908	1.931	0.988	98.81%	0.00	0.010
802.11n HT20 MCS7	0.136	0.157	0.866	86.55%	0.63	7.364
802.11n HT40 MCS0	2.412	2.444	0.987	98.69%	0.00	0.010
802.11n HT40 MCS7	0.087	0.108	0.806	80.58%	0.94	11.469
802.11ac VHT80 MCS0	1.143	1.168	0.979	97.86%	0.09	0.875
802.11ac VHT80 MCS9	0.208	0.231	0.901	90.13%	0.45	4.804
802.11ax HE20 RU26, MCS0	3.998	4.032	0.992	99.16%	0.00	0.010
802.11ax HE20 RU26, MCS11	0.292	0.326	0.898	89.83%	0.47	3.420
802.11ax HE20 RU106, MCS0	3.494	3.539	0.987	98.73%	0.00	0.010
802.11ax HE20 RU106 MCS11	0.264	0.288	0.917	91.71%	0.38	3.784
802.11ax HE40 RU26, MCS0	3.990	4.045	0.986	98.64%	0.00	0.010
802.11ax HE40 RU26, MCS11	0.292	0.325	0.899	89.93%	0.46	3.423
802.11ax HE40 RU106, MCS0	3.521	3.553	0.991	99.10%	0.00	0.010
802.11ax HE40 RU106, MCS11	0.264	0.296	0.891	89.13%	0.50	3.786
802.11ax HE80 RU26, MCS0	3.995	4.027	0.992	99.21%	0.00	0.010
802.11ax HE80 RU26, MCS11	0.264	0.297	0.887	88.66%	0.52	3.794
802.11ax HE80 RU106, MCS0	3.518	3.550	0.991	99.10%	0.00	0.010
802.11ax HE80 RU106 MCS11	0.264	0.297	0.887	88.66%	0.52	3.794

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
5GHz Band						
802.11ax HE20 SU, MCS0	1.488	1.513	0.984	98.37%	0.00	0.010
802.11ax HE20 SU, MCS11	0.145	0.166	0.877	87.70%	0.57	6.878
802.11ax HE40 SU, MCS0	0.771	0.794	0.971	97.10%	0.13	1.297
802.11ax HE40 SU, MCS11	0.102	0.122	0.831	83.14%	0.80	9.852
802.11ax HE80 SU, MCS0	0.734	0.760	0.967	96.68%	0.15	1.362
802.11ax HE80 SU, MCS11	0.082	0.105	0.783	78.26%	1.06	12.191

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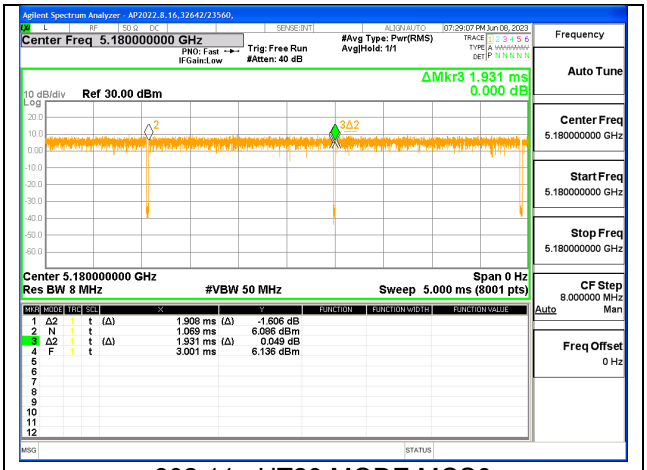
DUTY CYCLE PLOTS



802.11n HT20 MODE MCS0

Note: There are same duty cycle factor on 1TX and 2TX

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9.2. 26 dB AND 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

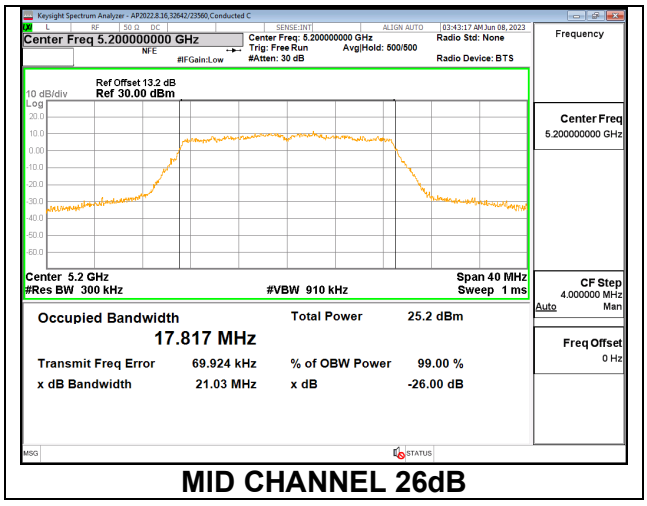
RESULTS

ID:	32642	Date:	6/8/23

9.2.1. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.82	18.0260
Mid	5200	21.03	17.8170
High	5240	21.25	17.8440



MID CHANNEL 26dB

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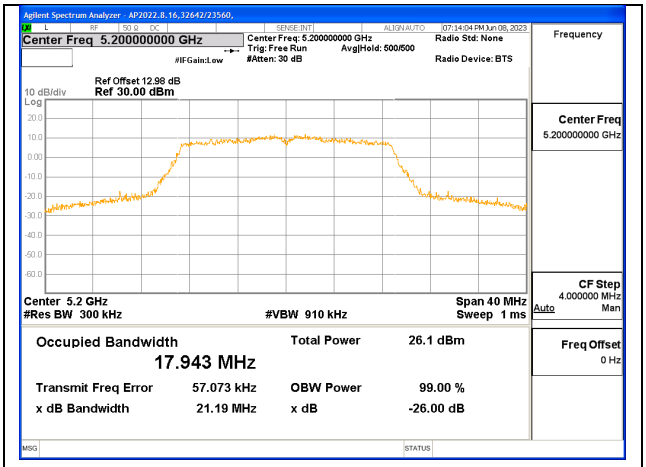
1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	21.92	17.9640
Mid	5200	21.19	17.9430
High	5240	21.39	17.9250



MID CHANNEL

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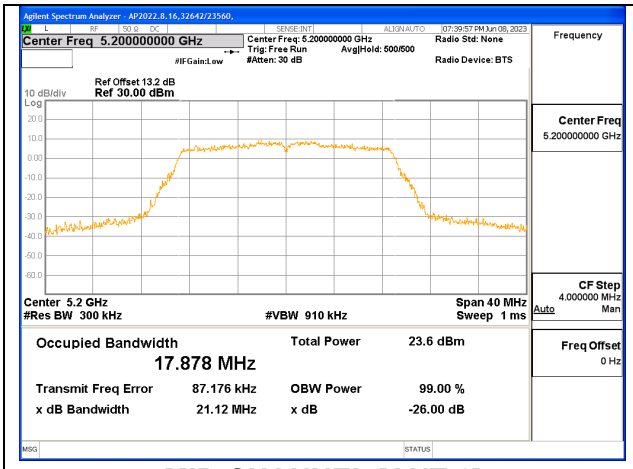
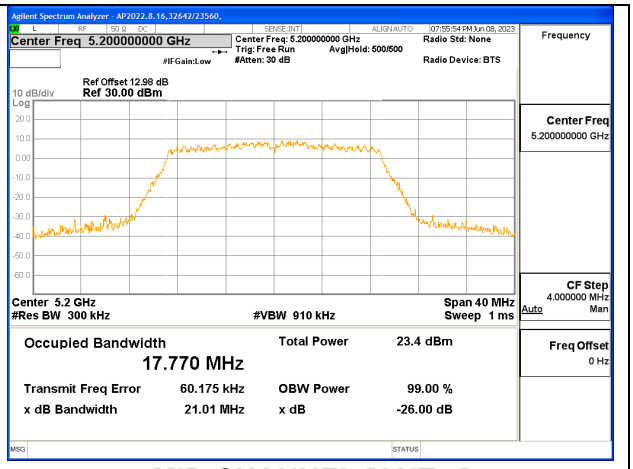
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	22.00	23.02	18.0220	17.9310
Mid	5200	21.12	21.01	17.8780	17.7700
High	5240	20.91	21.02	17.8460	17.7400



MID CHANNEL [ANT 6]

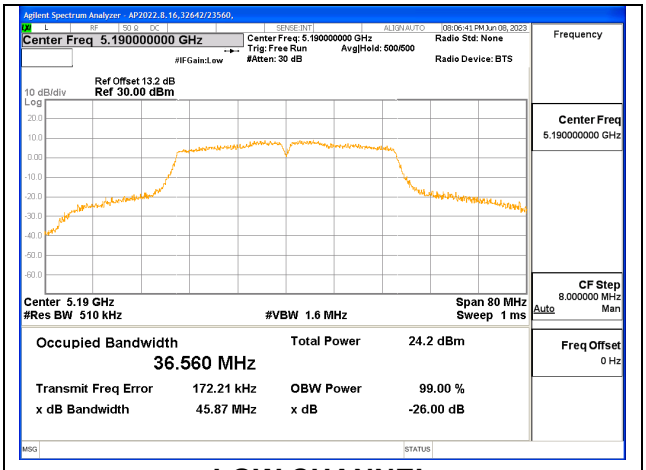


MID CHANNEL [ANT 5]

9.2.2. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	45.87	36.5600
High	5230	41.39	36.3790



LOW CHANNEL

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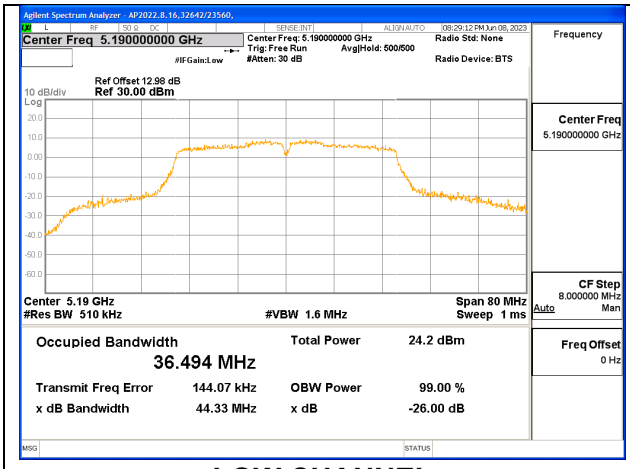
1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	44.33	36.4940
High	5230	41.35	36.3750



LOW CHANNEL

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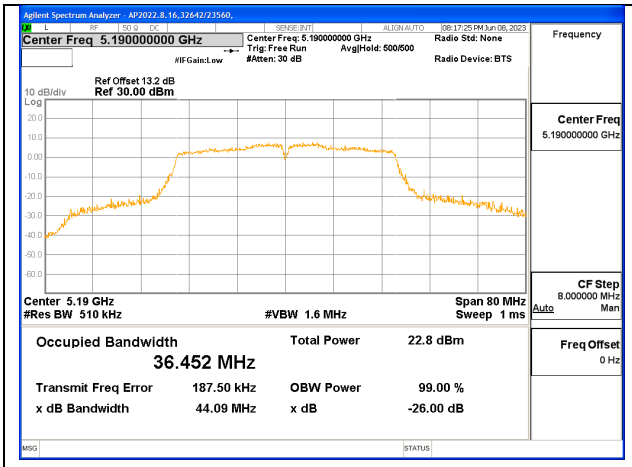
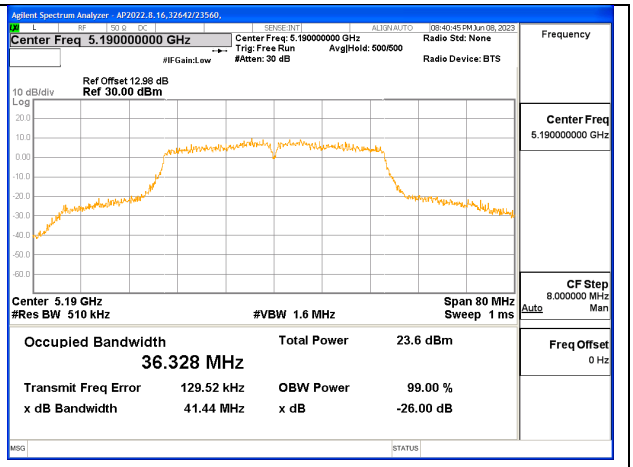
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	44.0900	41.4400	36.4520	36.3280
High	5230	41.4700	40.5600	36.4370	36.2780



LOW CHANNEL [ANT 6]

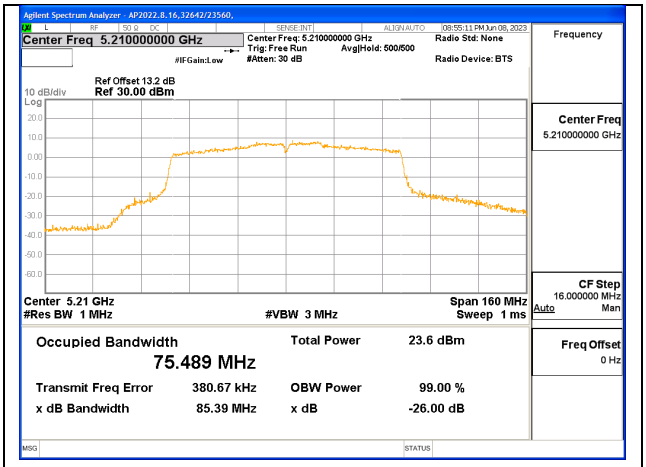


LOW CHANNEL [ANT 5]

9.2.3. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	85.39	75.4890



MID CHANNEL

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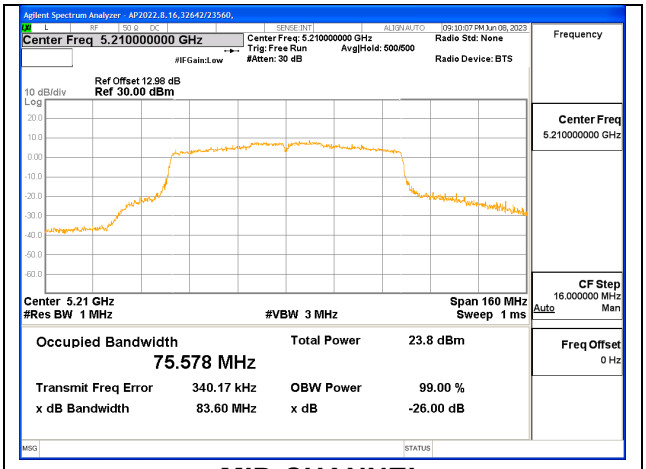
1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.60	75.5780



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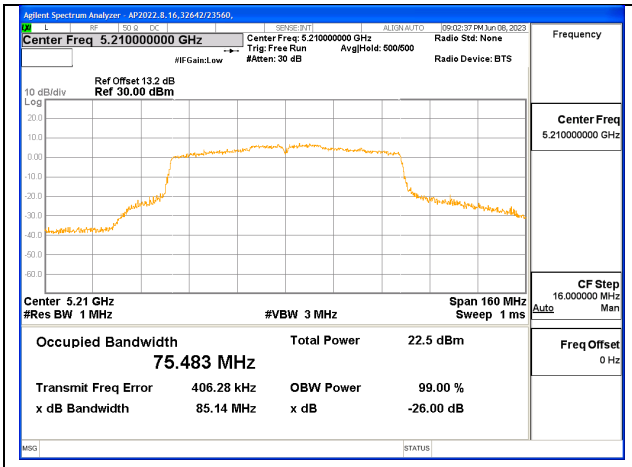
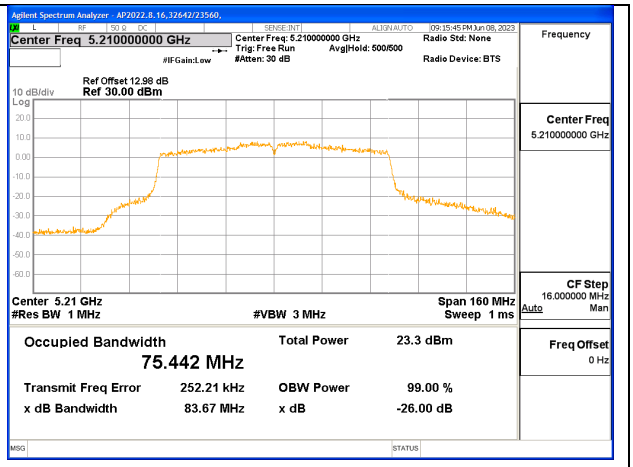
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	85.14	83.67	75.4830	75.4420



MID CHANNEL [ANT 6]

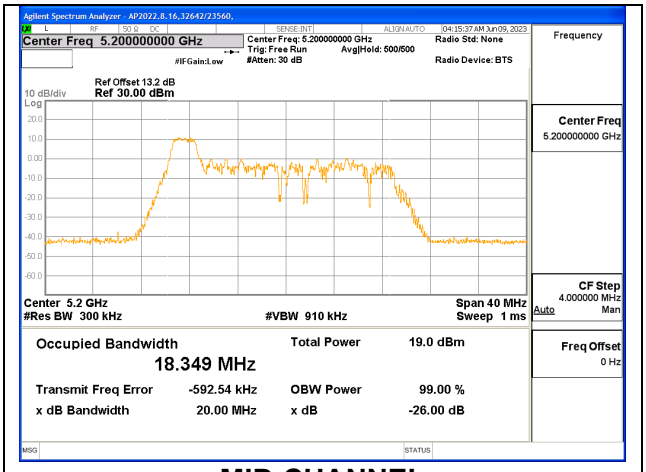


MID CHANNEL [ANT 5]

9.2.4. 802.11ax HE20 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE : 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.89	18.3200
Mid	5200	20.00	18.3490
High	5240	18.94	17.7220



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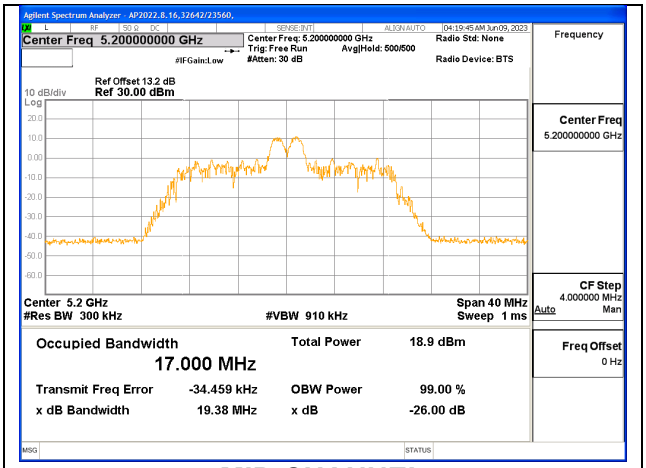
1TX Antenna 6 MODE : 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.20	17.1300
Mid	5200	19.38	17.0000
High	5240	19.38	17.0090



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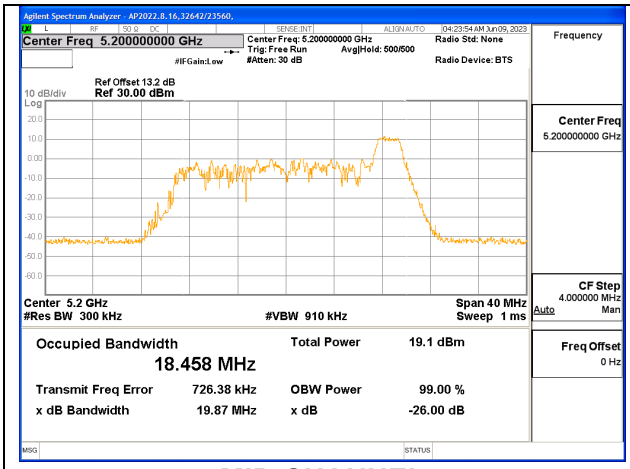
1TX Antenna 6 MODE : 26 Tones, RU Index 8

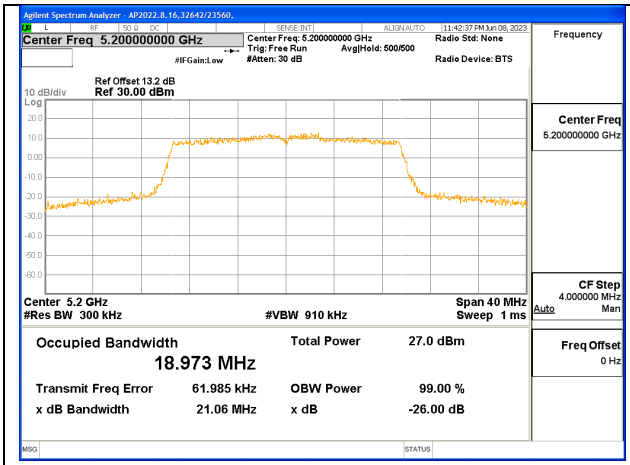
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.27	18.360
Mid	5200	19.87	18.458
High	5240	20.34	18.419



MID CHANNEL

1TX Antenna 6 MODE : SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	21.61	18.9920
Mid	5200	21.06	18.9730
High	5240	21.16	19.0060



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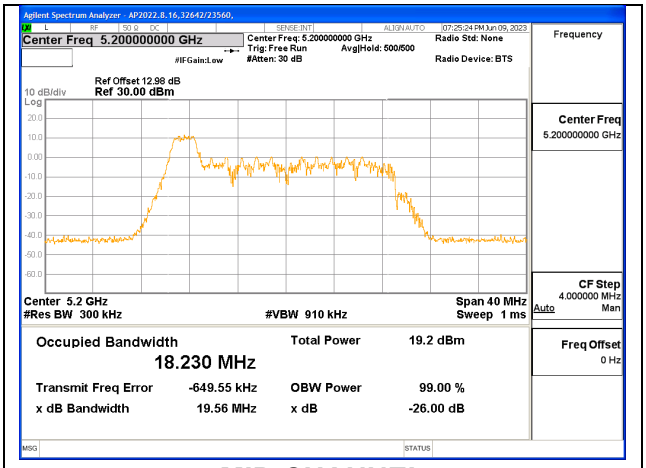
1TX Antenna 5 MODE: 26 Tones, RU Index 0

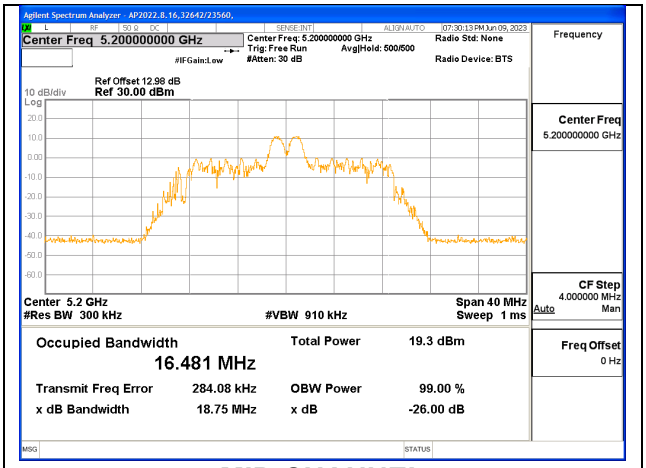
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.25	18.2130
Mid	5200	19.56	18.2300
High	5240	19.93	18.2650



MID CHANNEL

1TX Antenna 5 MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	18.41	17.0390
Mid	5200	18.75	16.4810
High	5240	19.29	16.9930

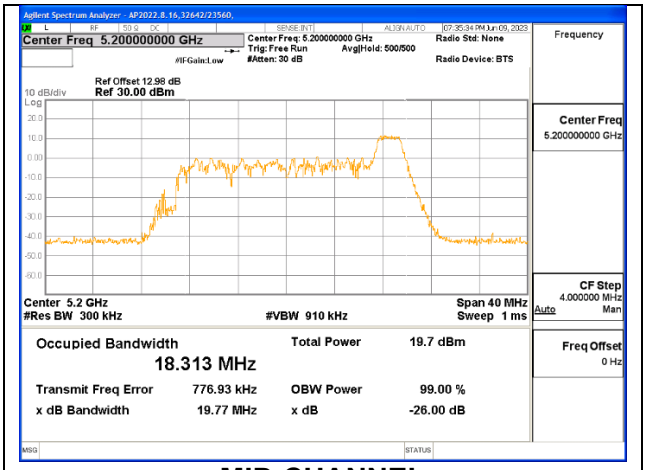


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 26 Tones, RU Index 8

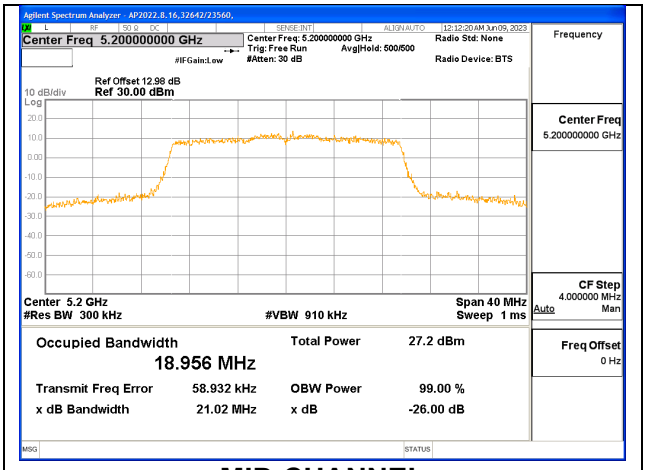
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.55	18.4580
Mid	5200	19.77	18.3130
High	5240	19.49	17.8740



MID CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	22.39	19.0090
Mid	5200	21.02	18.9560
High	5240	21.39	18.9700

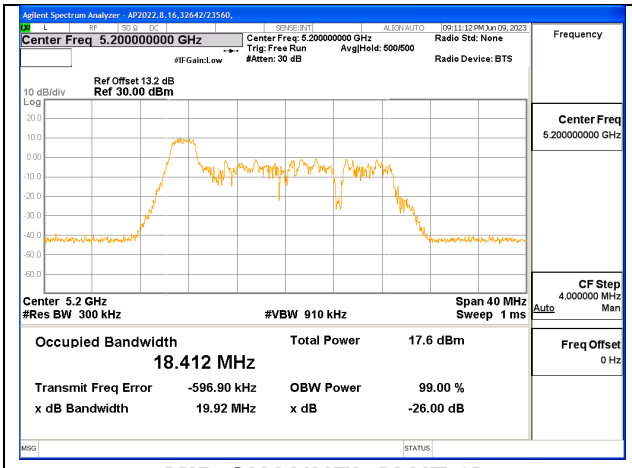


MID CHANNEL

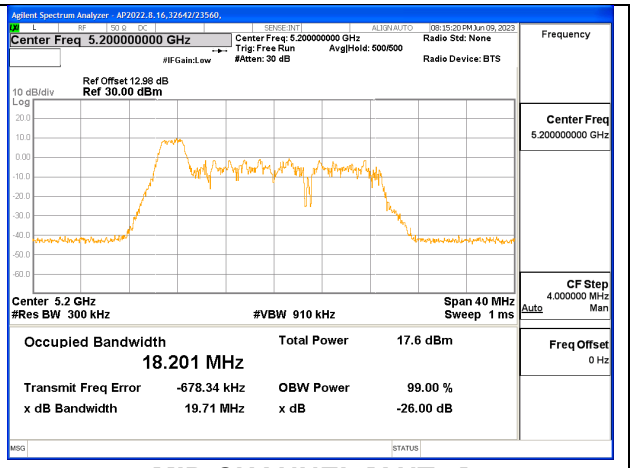
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	20.11	19.72	18.3250	18.1220
Mid	5200	19.92	19.71	18.4120	18.2010
High	5240	19.71	19.53	18.3180	18.2120



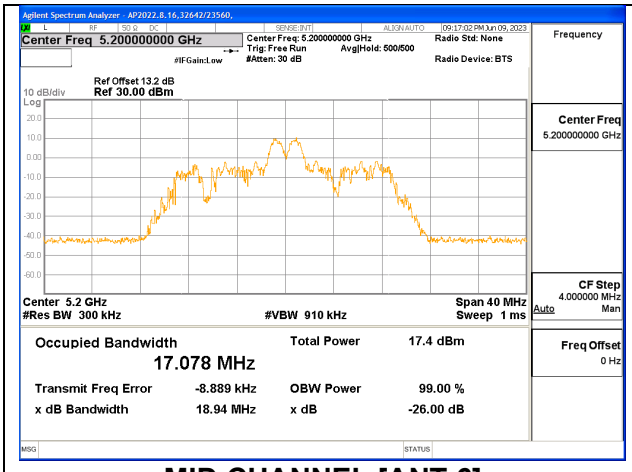
MID CHANNEL [ANT 6]



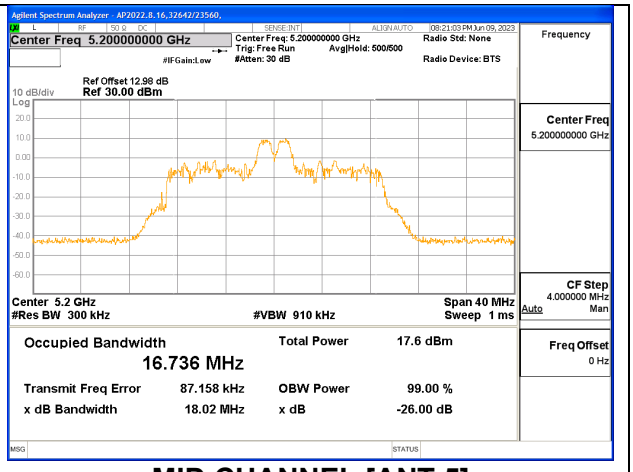
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 4

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	18.80	18.19	17.0780	16.9030
Mid	5200	18.94	18.02	17.0780	16.7360
High	5240	18.67	18.16	17.0070	16.7470



MID CHANNEL [ANT 6]

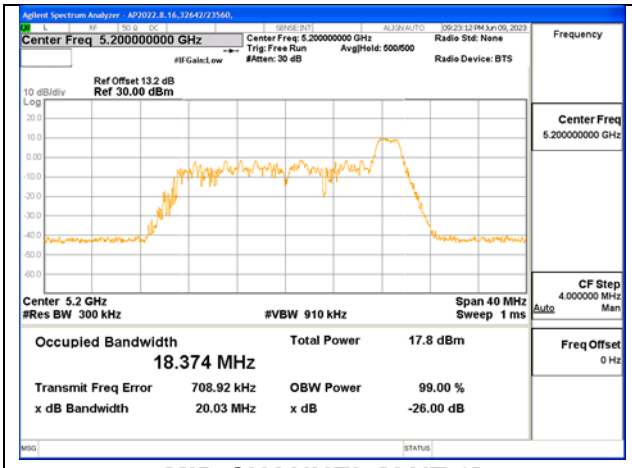


MID CHANNEL [ANT 5]

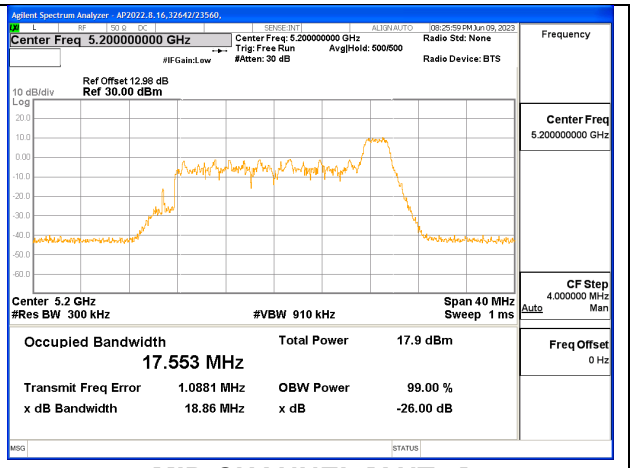
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	20.25	19.57	18.4730	18.2720
Mid	5200	20.03	18.86	18.3740	17.5530
High	5240	20.31	19.55	18.4670	18.3150



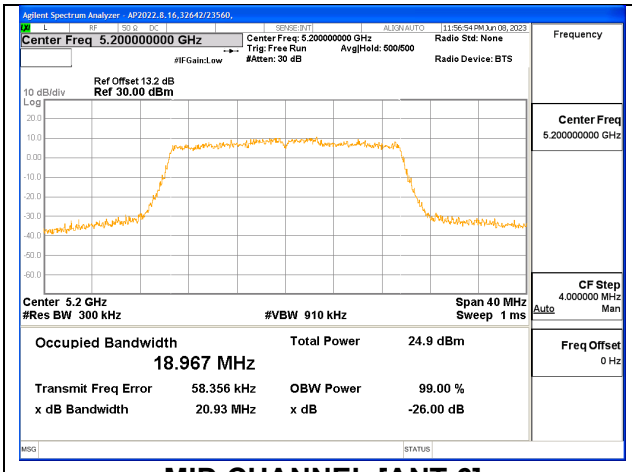
MID CHANNEL [ANT 6]



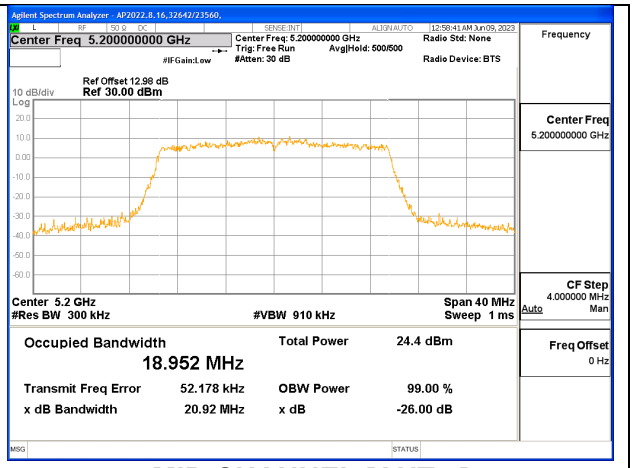
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5180	22.50	26.13	19.0260	19.0220
Mid	5200	20.93	20.92	18.9670	18.9520
High	5240	21.09	21.03	18.9710	18.9740



MID CHANNEL [ANT 6]



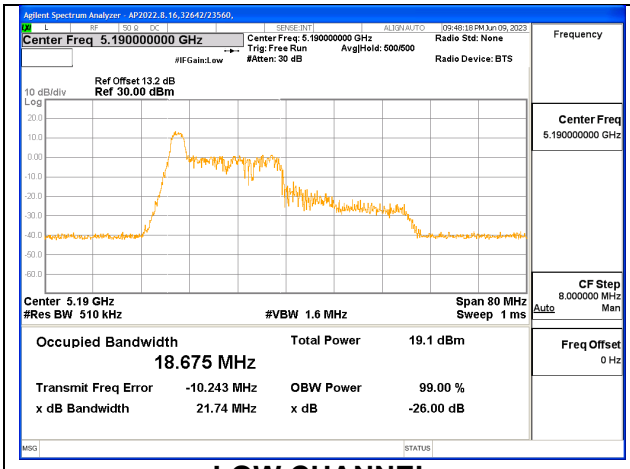
MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.5. 802.11ax HE40 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE: 26 Tones, RU Index 0

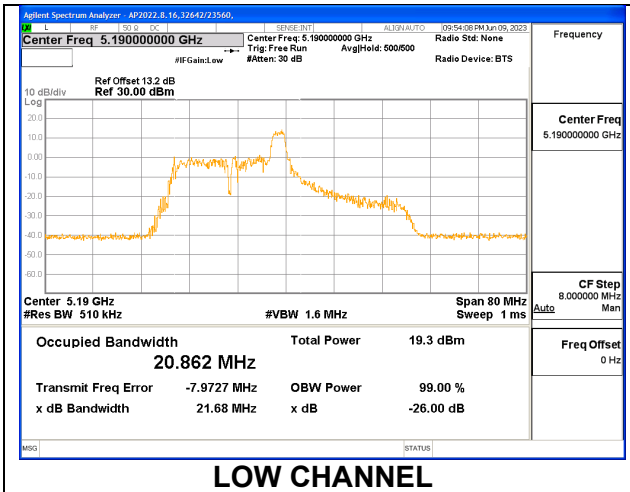
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	21.74	18.6750
High	5230	21.10	18.4010



LOW CHANNEL

1TX Antenna 6 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	21.68	20.8620
High	5230	23.44	21.1220

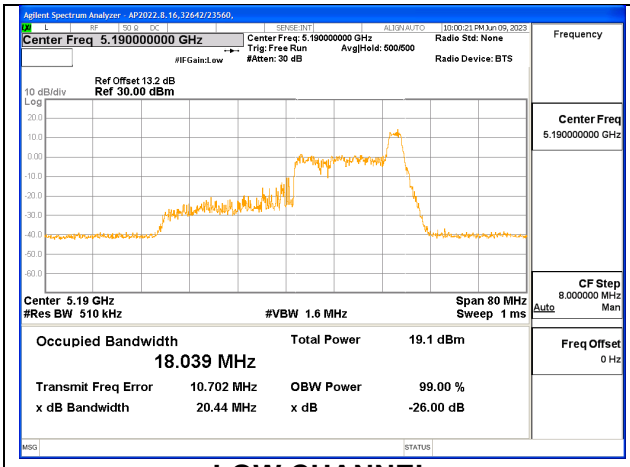


LOW CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 6 MODE: 26 Tones, RU Index 17

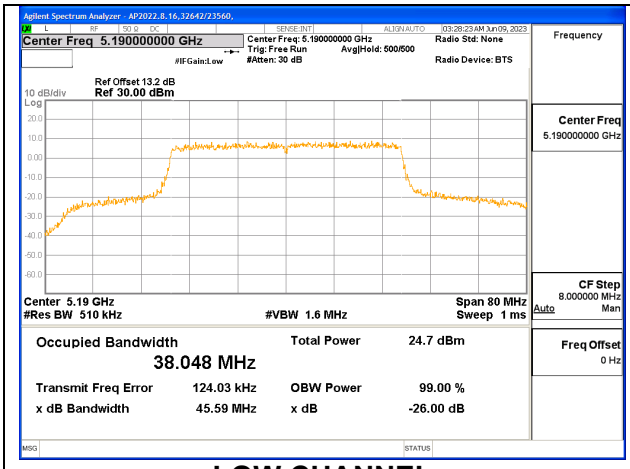
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.44	18.0390
High	5230	20.86	17.7790



LOW CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	45.59	38.0480
High	5230	41.75	38.0560

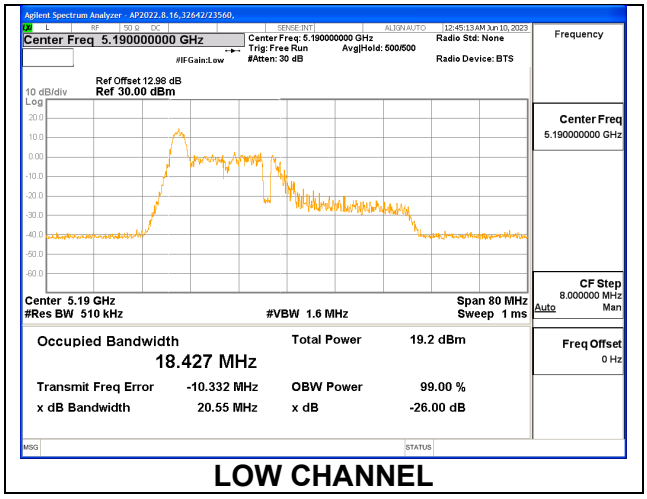


LOW CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 26 Tones, RU Index 0

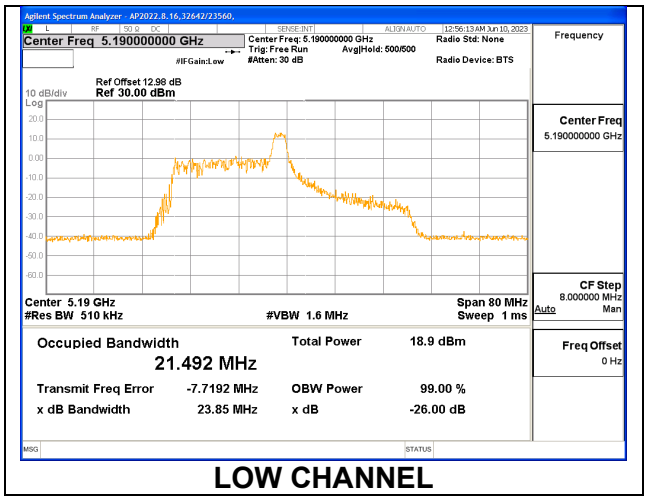
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.55	18.4270
High	5230	21.01	18.4490



LOW CHANNEL

1TX Antenna 5 MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	23.85	21.4920
High	5230	22.88	21.0840

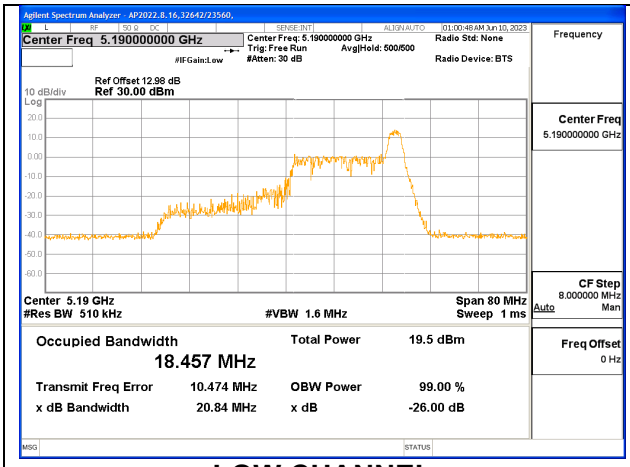


LOW CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 26 Tones, RU Index 17

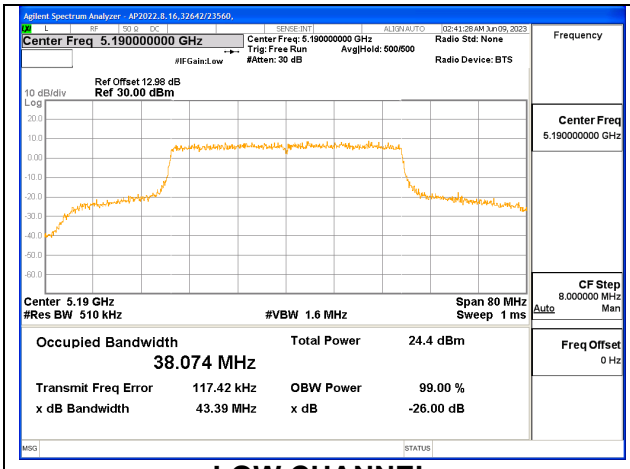
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	20.84	18.4570
High	5230	20.90	18.5100



LOW CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	43.39	38.0740
High	5230	41.54	38.0910

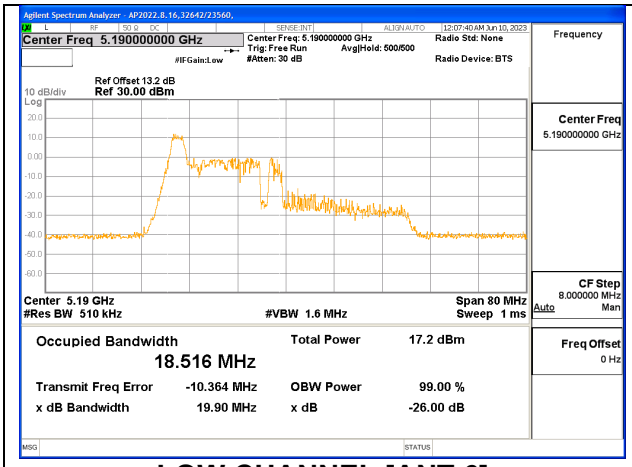


LOW CHANNEL

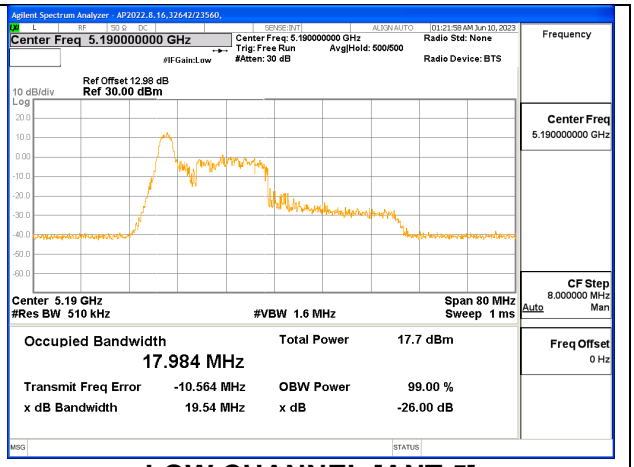
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	19.90	19.54	18.5160	17.9840
High	5230	21.39	20.02	18.7420	18.2100



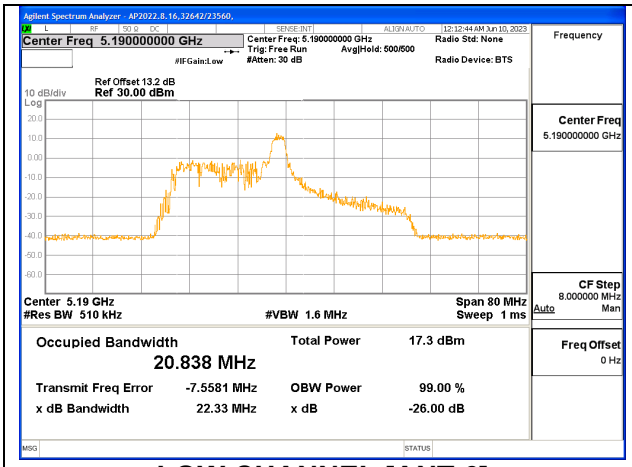
LOW CHANNEL [ANT 6]



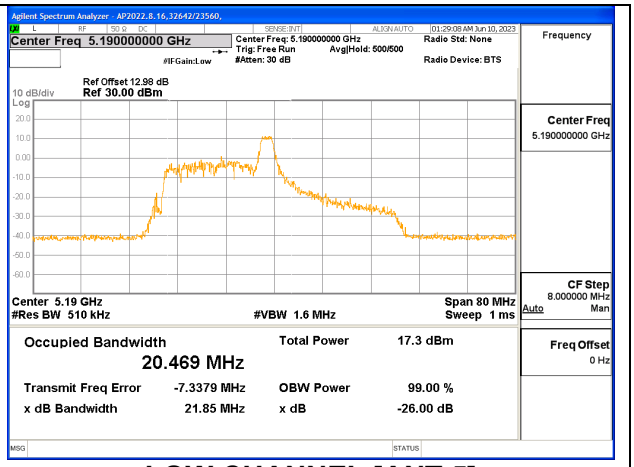
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 8

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	22.33	21.85	20.8380	20.4690
High	5230	23.82	24.14	21.3310	21.1340



LOW CHANNEL [ANT 6]

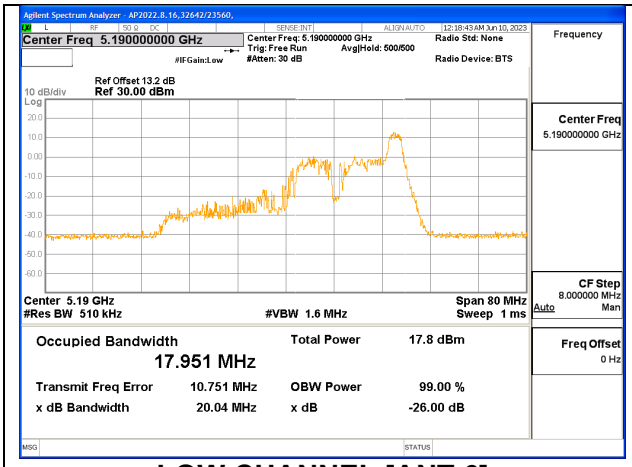


LOW CHANNEL [ANT 5]

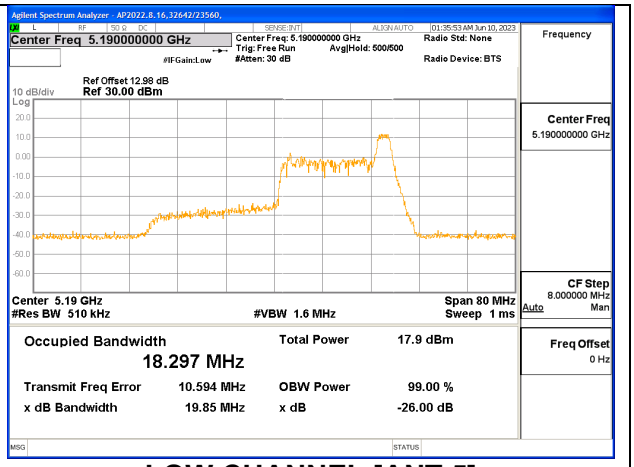
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 17

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	20.04	19.85	17.9510	18.2970
High	5230	20.63	19.68	18.6480	18.1380



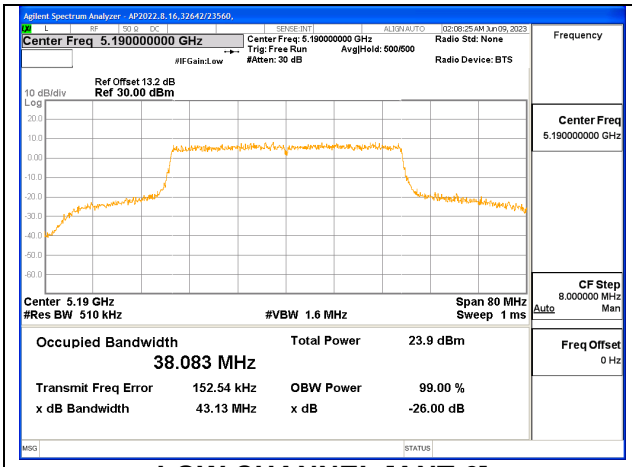
LOW CHANNEL [ANT 6]



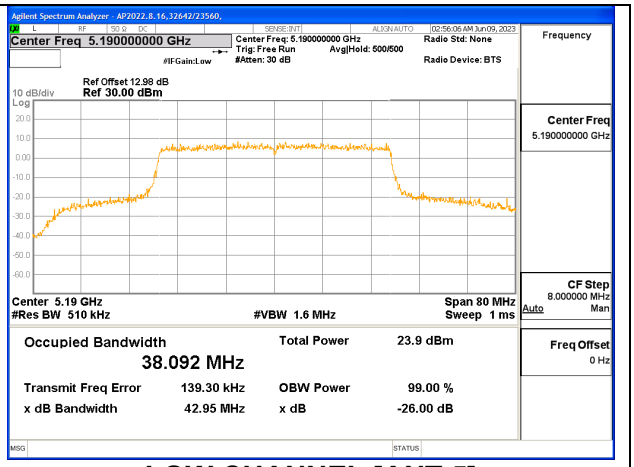
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5190	43.13	42.95	38.0830	38.0920
High	5230	41.73	41.70	38.0570	38.0680



LOW CHANNEL [ANT 6]



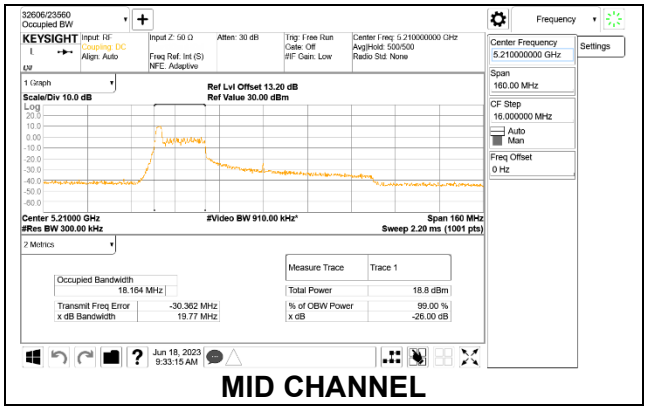
LOW CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.6. 802.11ax HE80 MODE IN THE 5.2 GHz BAND

1TX Antenna 6 MODE: 26 Tones, RU Index 0

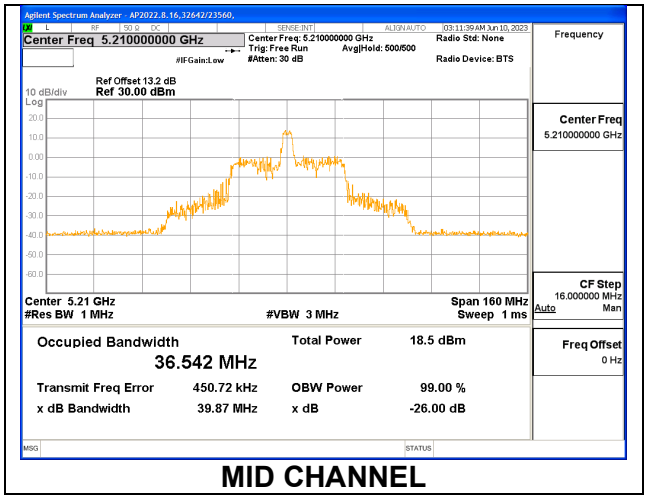
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	19.77	18.1640



MID CHANNEL

1TX Antenna 6 MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	39.87	36.5420

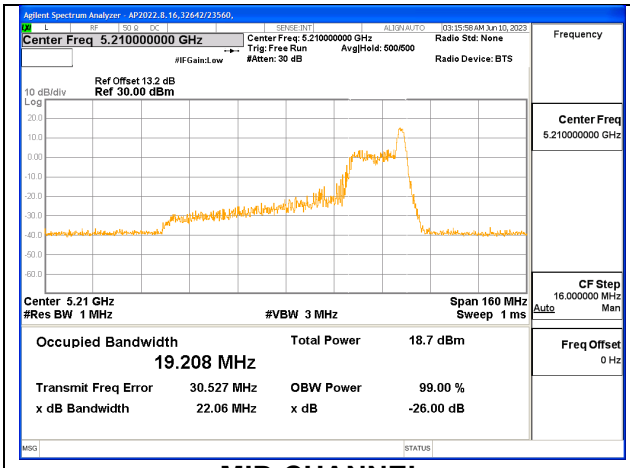


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 6 MODE: 26 Tones, RU Index 36

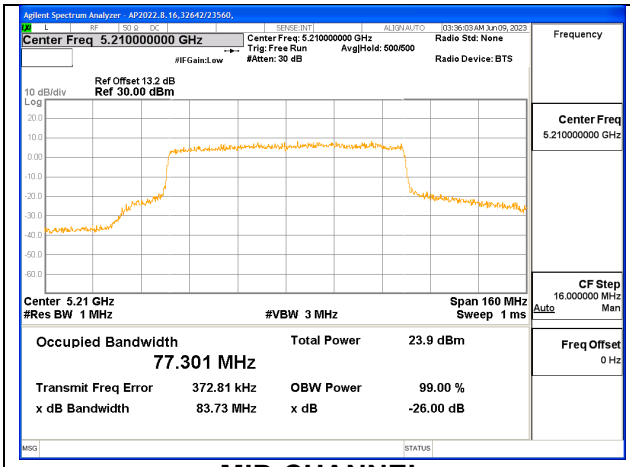
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	22.06	19.2080



MID CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.73	77.3010

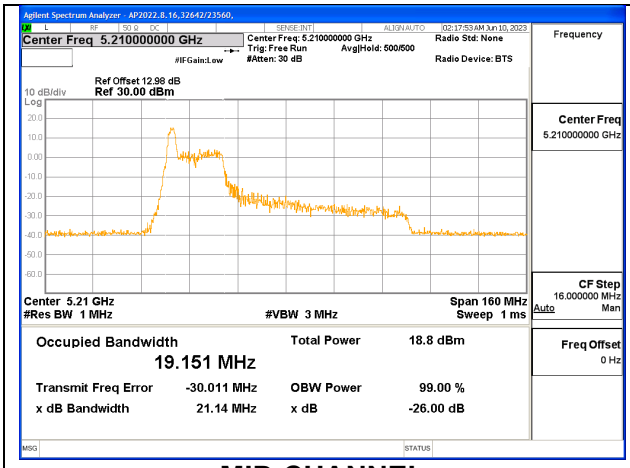


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 26 Tones, RU Index 0

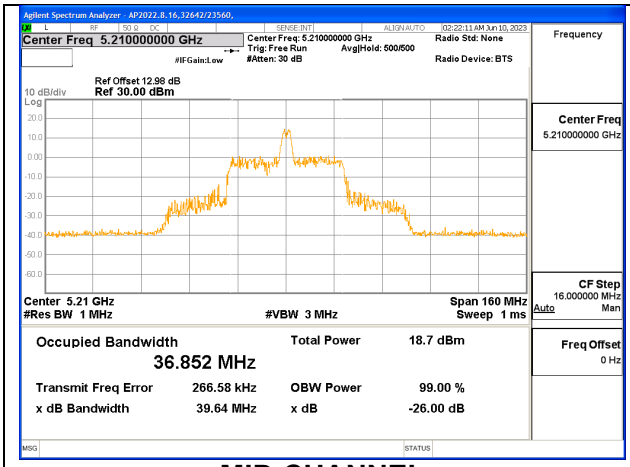
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	21.14	19.1510



MID CHANNEL

1TX Antenna 5 MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	39.64	36.8520

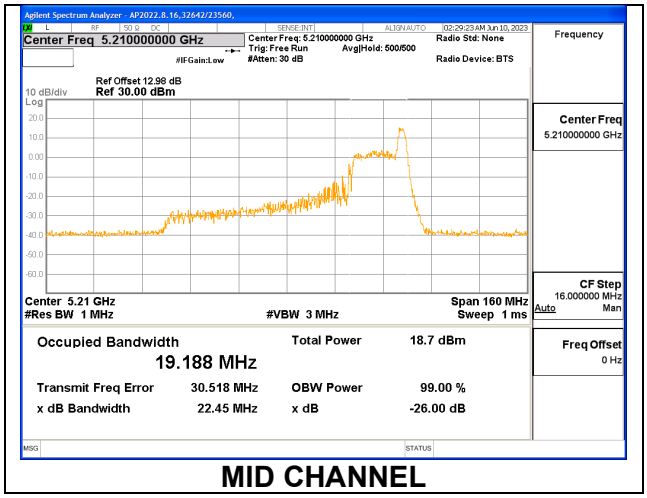


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 26 Tones, RU Index 36

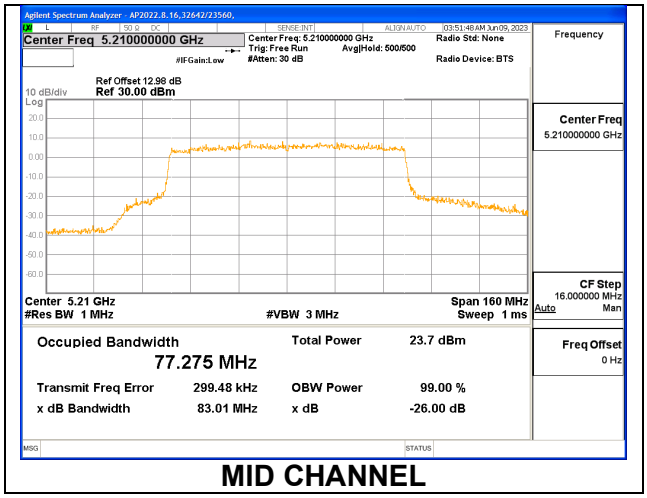
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	22.45	19.1880



MID CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.01	77.2750

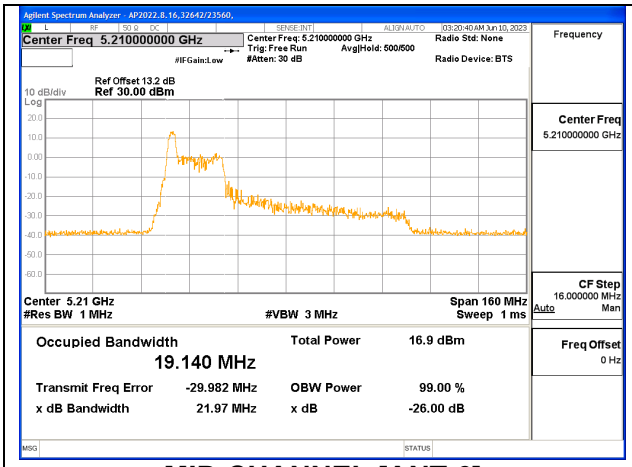


MID CHANNEL

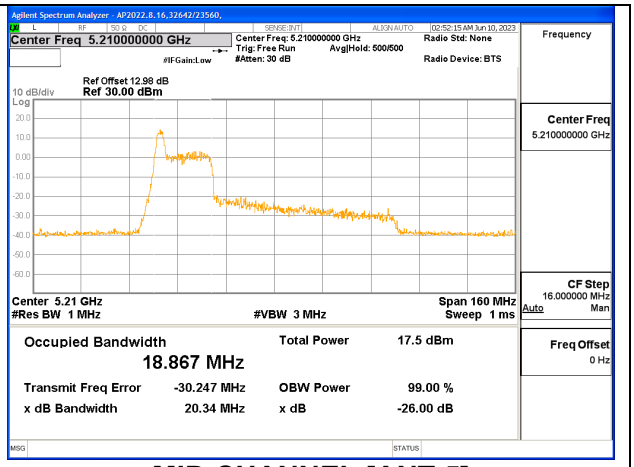
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 0

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	21.97	20.34	19.1400	18.8670



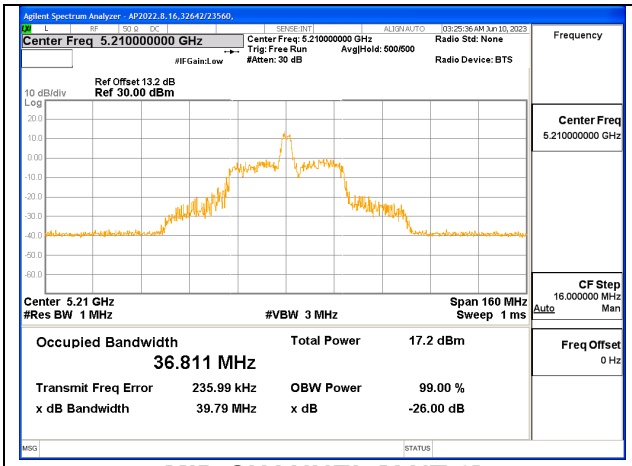
MID CHANNEL [ANT 6]



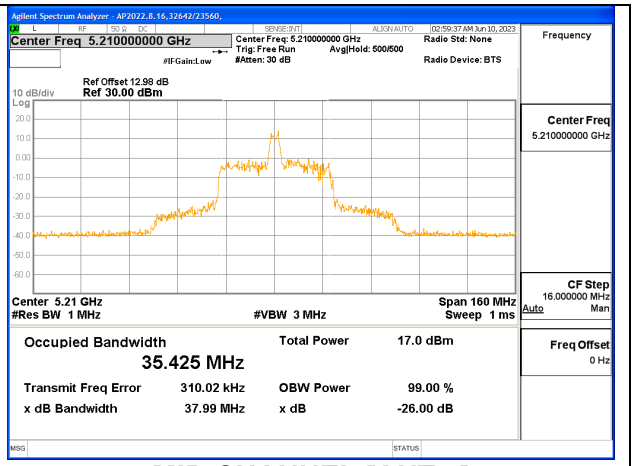
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 18

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	39.79	37.99	36.8110	35.4250



MID CHANNEL [ANT 6]

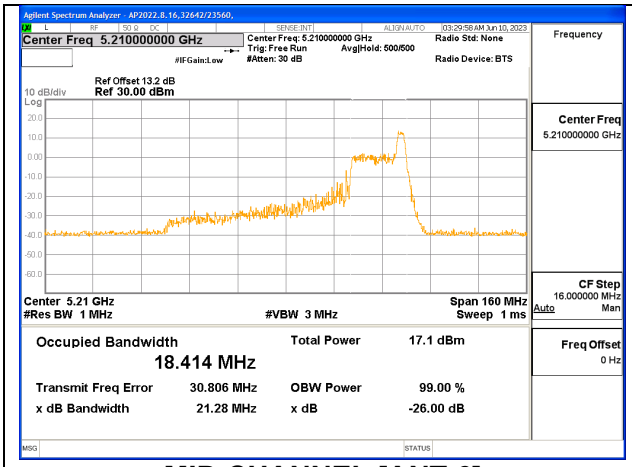


MID CHANNEL [ANT 5]

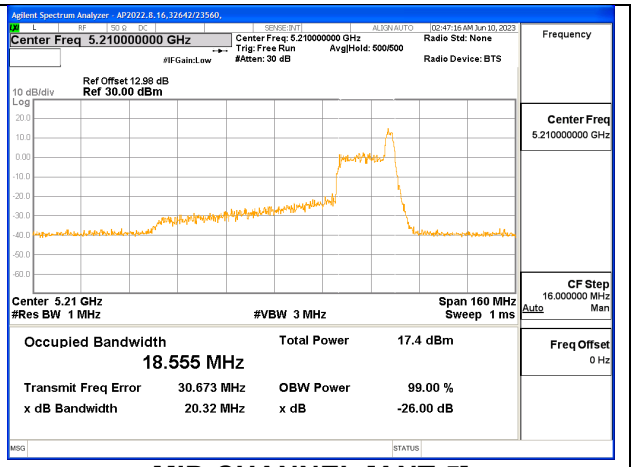
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 26 Tones, RU Index 36

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	21.28	20.32	18.4140	18.5550



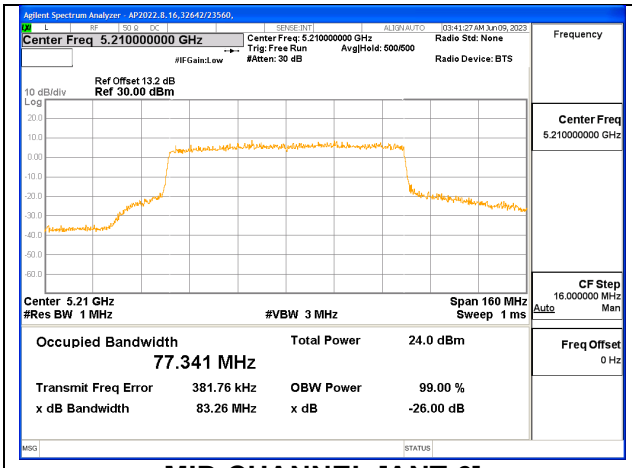
MID CHANNEL [ANT 6]



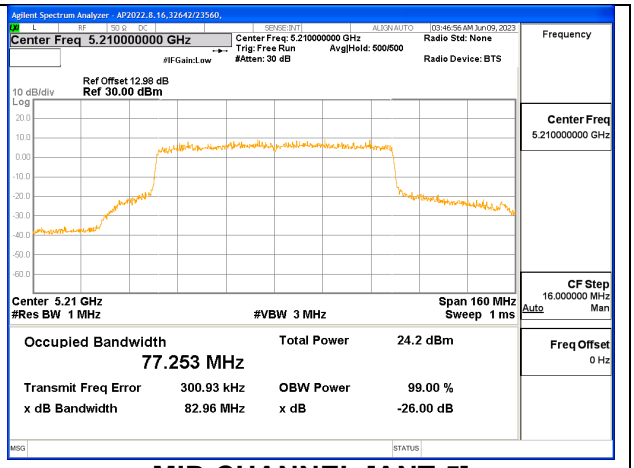
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5210	83.26	82.96	77.3410	77.2530



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
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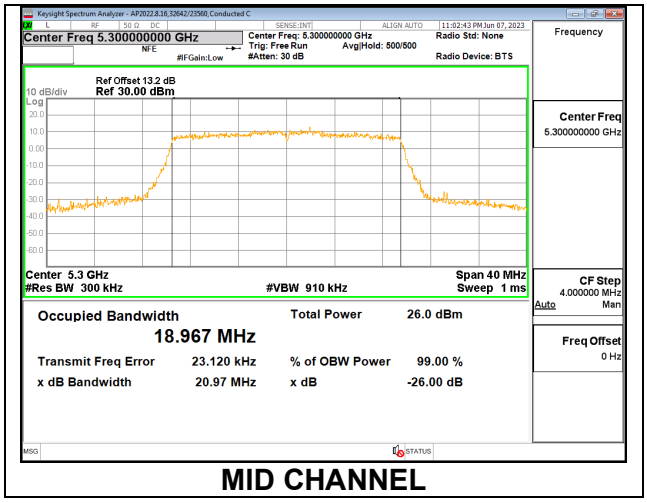
9.2.7. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE

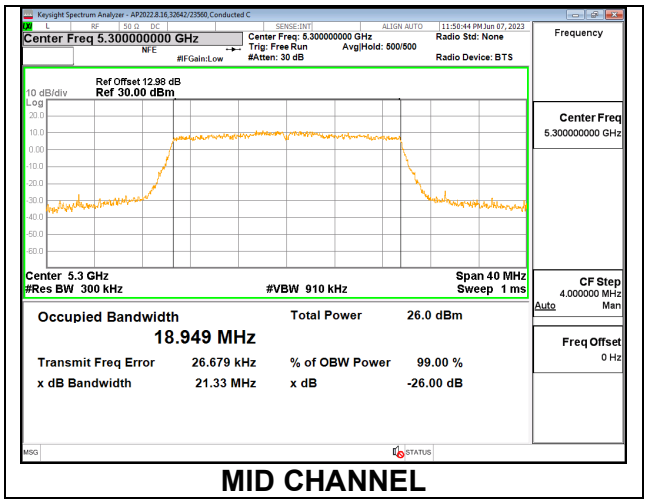
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	21.06	18.9650
Mid	5300	20.97	18.9670
High	5320	21.96	19.0290



MID CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	21.02	18.9950
Mid	5300	21.33	18.9490
High	5320	23.55	19.0090



MID CHANNEL

UL VERIFICATION SERVICES INC.
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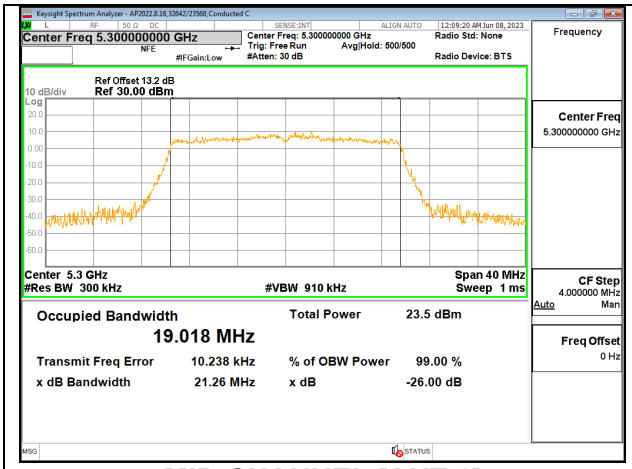
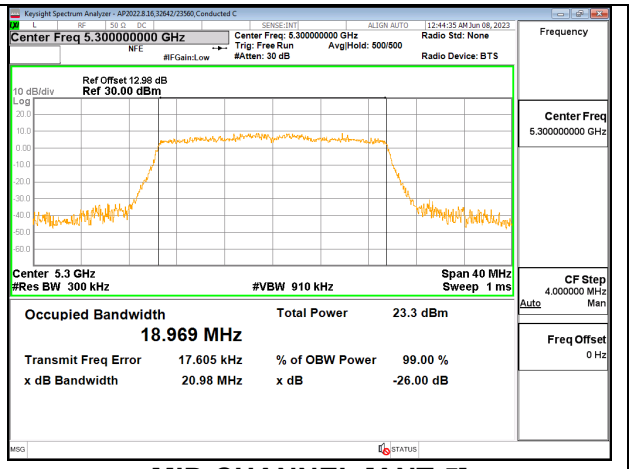
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	21.12	20.95	18.9930	18.9470
Mid	5300	21.26	20.98	19.0180	18.9690
High	5320	21.72	21.13	19.0020	19.0100



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
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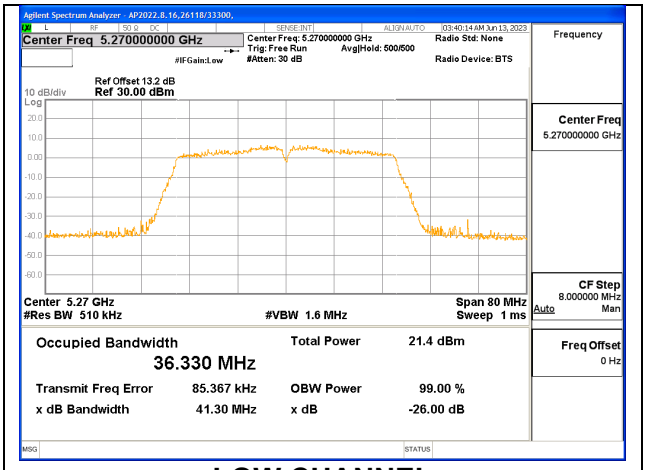
9.2.8. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE

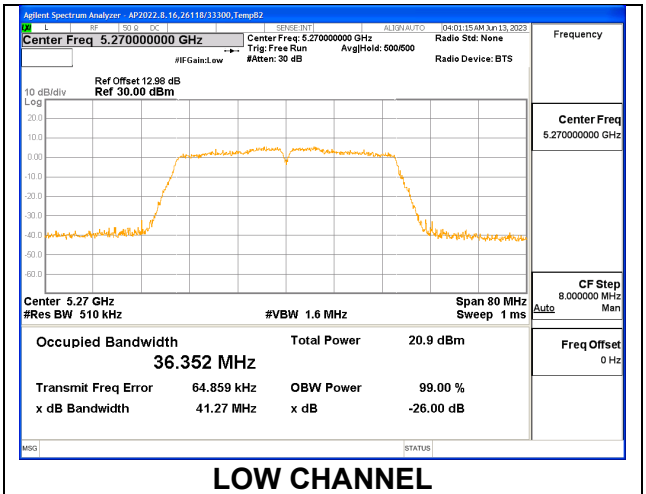
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	41.30	36.3300
High	5310	42.40	36.4490



LOW CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	41.27	36.3520
High	5310	43.53	36.4890



LOW CHANNEL

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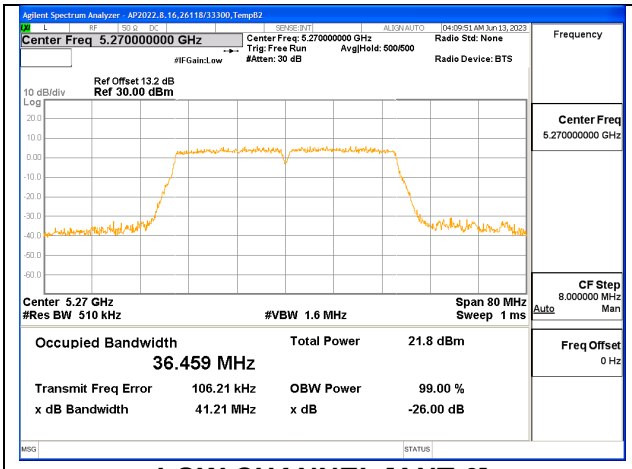
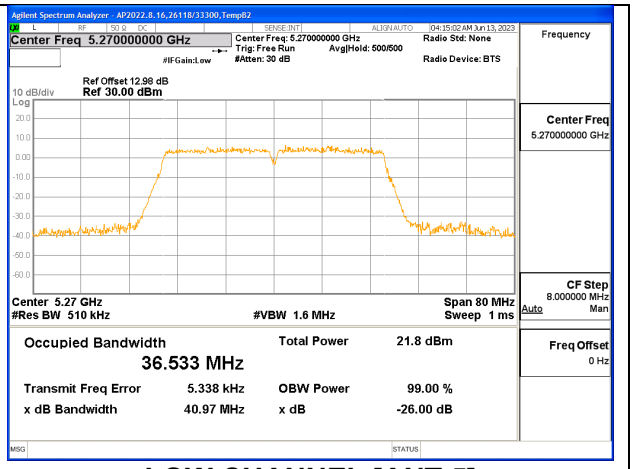
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	41.21	40.97	36.4590	36.5330
High	5310	41.18	41.24	36.4590	36.5370



LOW CHANNEL [ANT 6]



LOW CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
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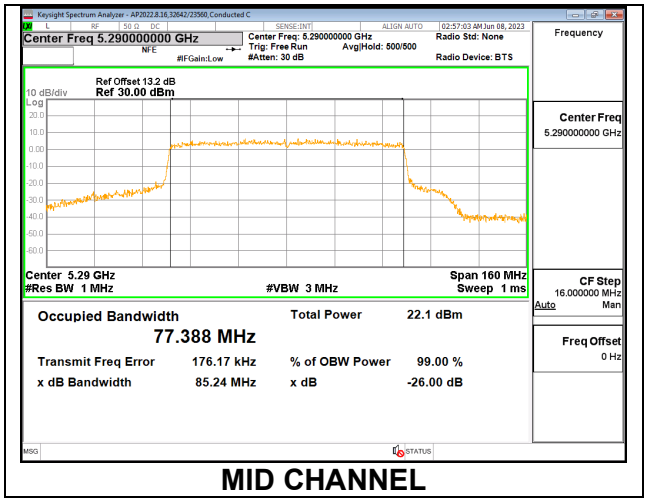
9.2.9. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE

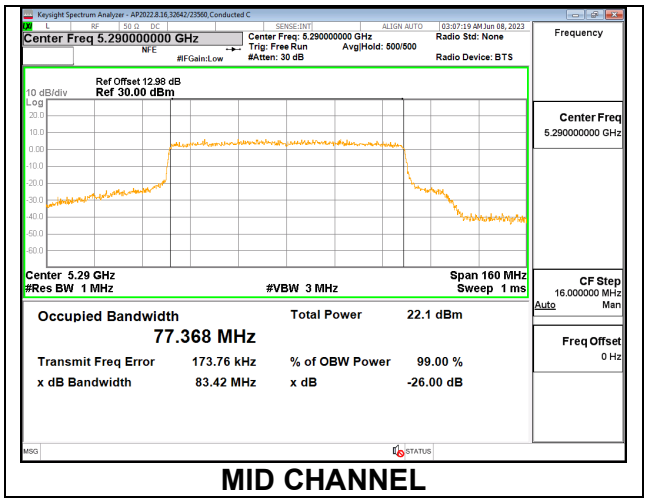
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99& Bandwidth (MHz)
Mid	5290	85.24	77.3880



MID CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99& Bandwidth (MHz)
Mid	5290	83.42	77.3680



MID CHANNEL

UL VERIFICATION SERVICES INC.
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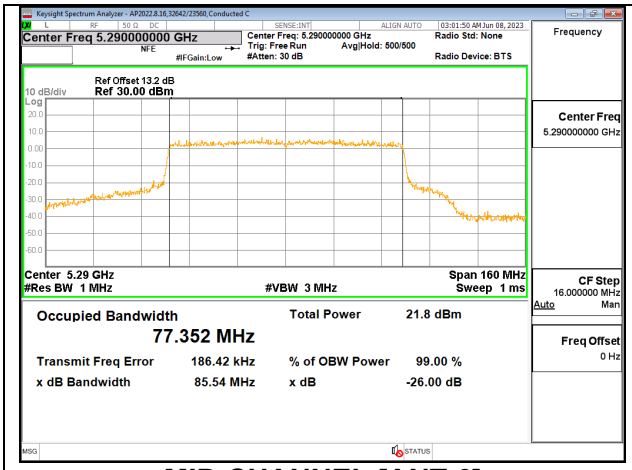
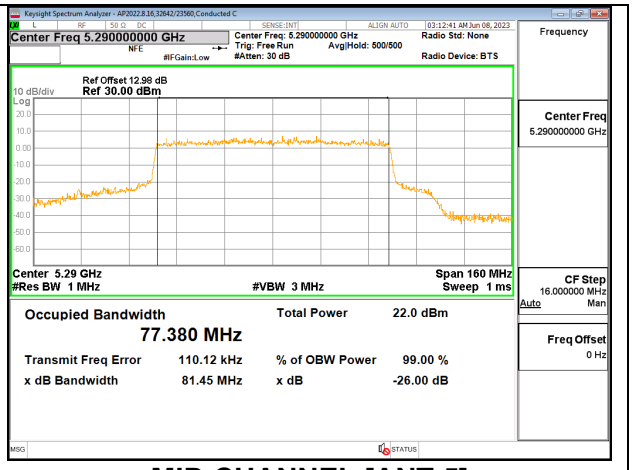
2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	85.54	81.45	77.352	77.380



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
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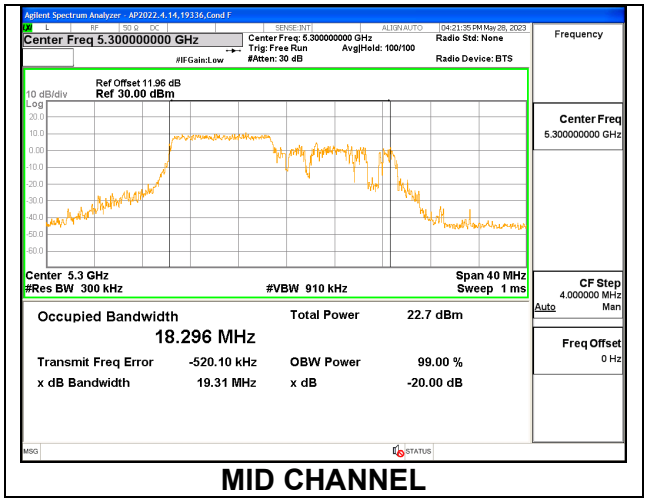
9.2.10. 802.11ax HE20 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE: 106 Tones, RU Index 53

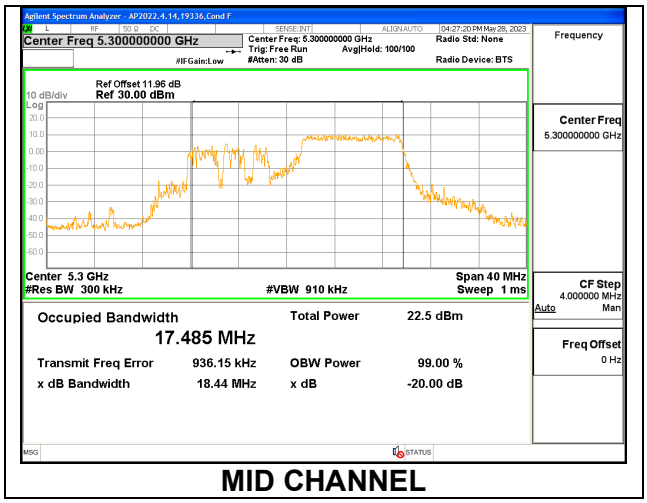
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.23	18.0720
Mid	5300	19.31	18.2960
High	5320	19.46	18.2660



MID CHANNEL

1TX Antenna 6 MODE: 106 Tones, RU Index 54

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.57	18.3430
Mid	5300	18.44	17.4850
High	5320	19.65	18.2600



MID CHANNEL

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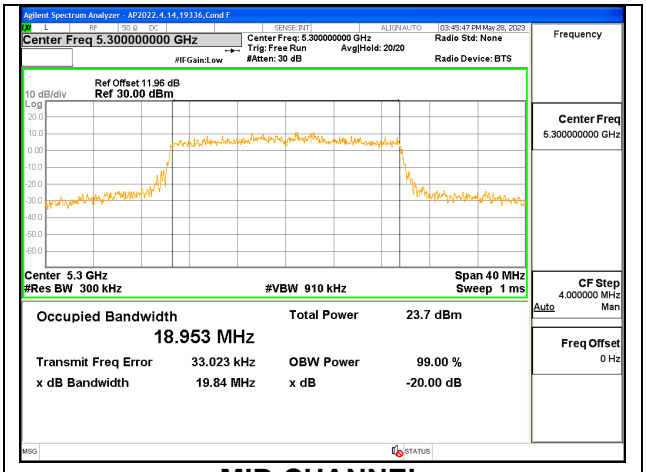
1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.95	18.9690
Mid	5300	19.84	18.9530
High	5320	19.62	18.9950



MID CHANNEL

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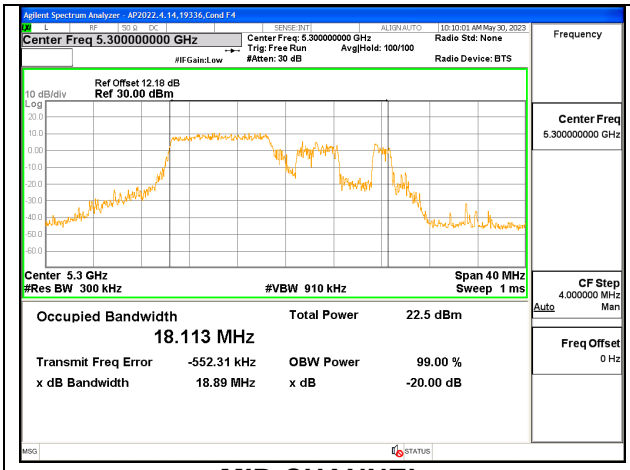
1TX Antenna 5 MODE: 106 Tones, RU Index 53

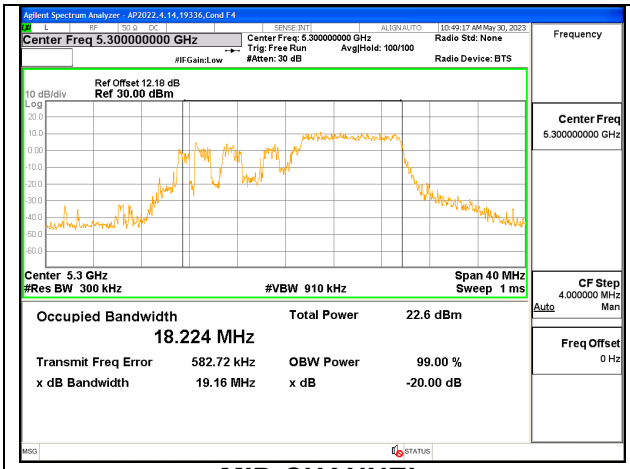
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.10	18.2060
Mid	5300	18.89	18.1130
High	5320	19.01	18.0980



MID CHANNEL

1TX Antenna 5 MODE: 106 Tones, RU Index 54

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.84	18.2990
Mid	5300	19.16	18.2240
High	5320	18.95	18.0140



MID CHANNEL

UL VERIFICATION SERVICES INC.
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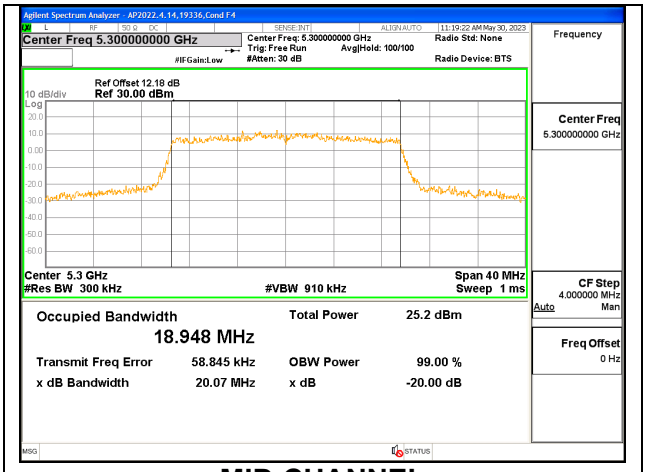
1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	20.06	19.0040
Mid	5300	20.07	18.9480
High	5320	20.13	19.0730



MID CHANNEL

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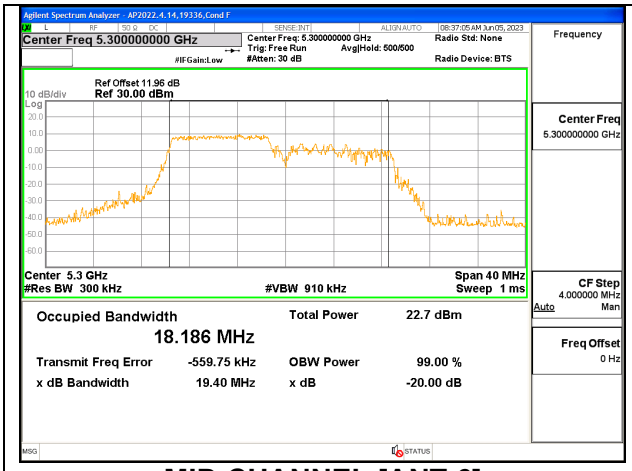
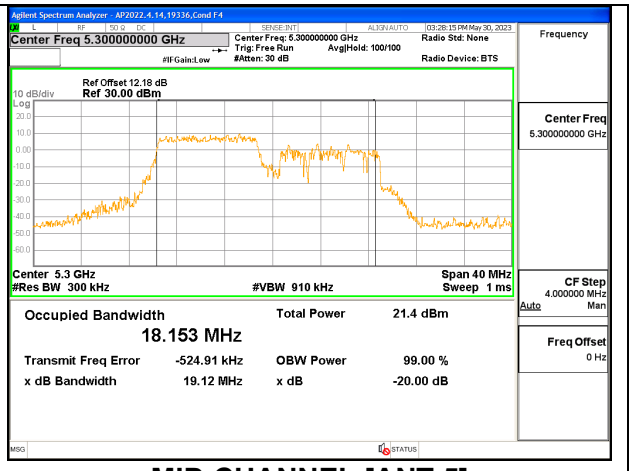
2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 53

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	19.48	18.64	17.5190	17.8490
Mid	5300	19.40	19.12	18.1860	18.1530
High	5320	19.21	19.22	18.0910	18.1340



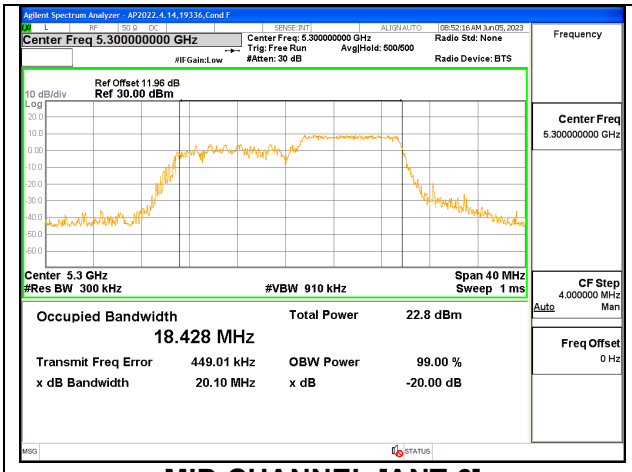
MID CHANNEL [ANT 6]



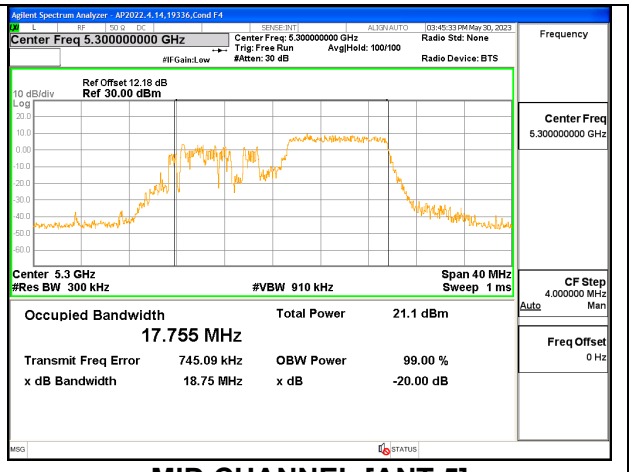
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 54

Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
5260	20.13	19.09	18.2670	18.2100
5300	20.10	18.75	18.4280	17.7550
5320	20.02	18.31	18.1900	17.1900



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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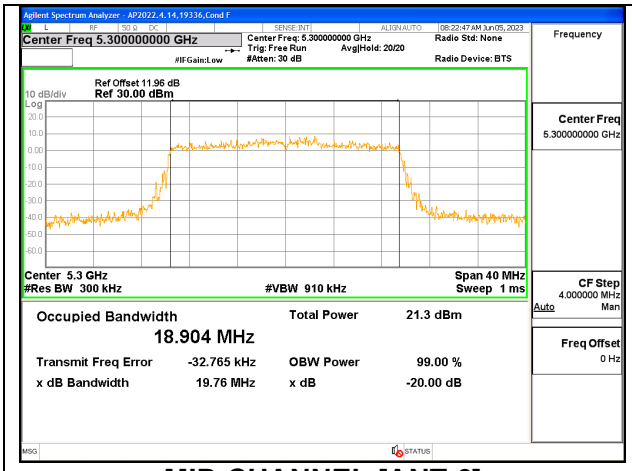
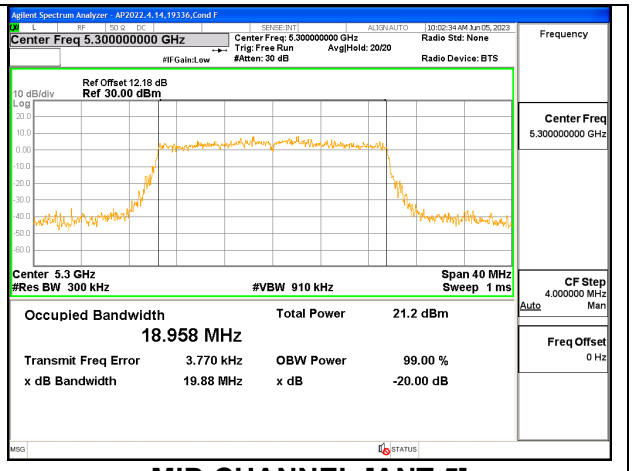
2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5260	19.85	19.76	18.8360	18.9640
Mid	5300	19.76	19.88	18.9040	18.9580
High	5320	19.57	19.94	18.9240	18.9520



MID CHANNEL [ANT 6]



MID CHANNEL [ANT 5]

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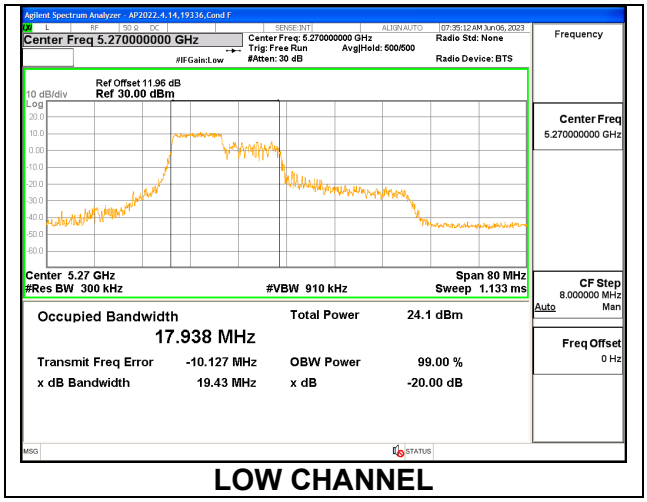
9.2.11. 802.11ax HE40 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE: 106 Tones, RU Index 53

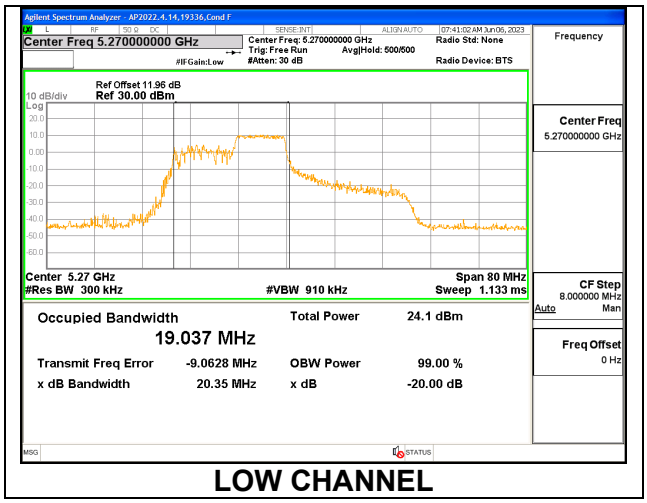
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	19.43	17.9380
High	5310	19.08	17.9760



LOW CHANNEL

1TX Antenna 6 MODE: 106 Tones, RU Index 54

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.35	19.0370
High	5310	20.31	19.0370



LOW CHANNEL

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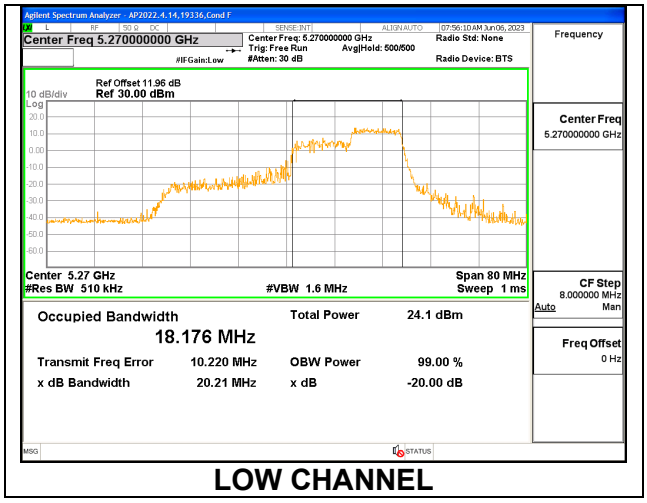
1TX Antenna 6 MODE: 106 Tones, RU Index 56

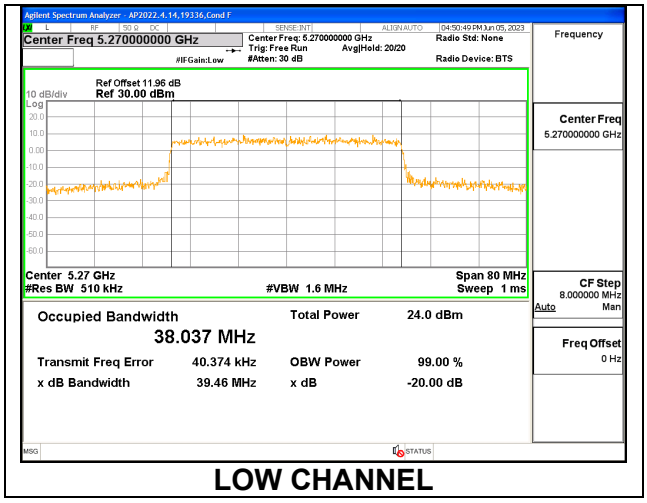
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.21	18.1760
High	5310	20.05	18.0030



LOW CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	39.46	38.0370
High	5310	39.46	38.0380

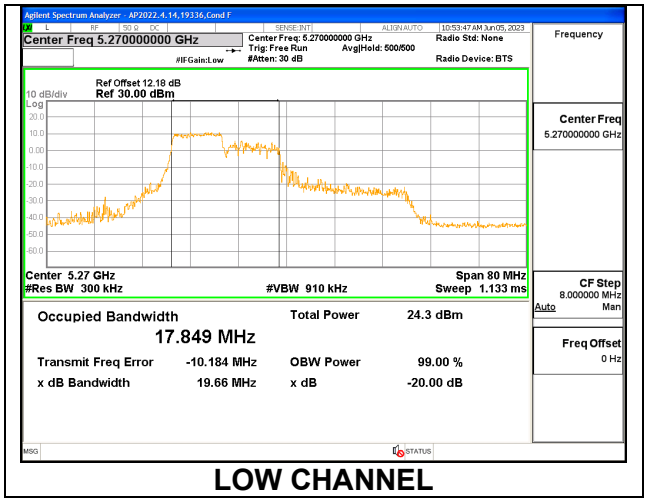


LOW CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 106 Tones, RU Index 53

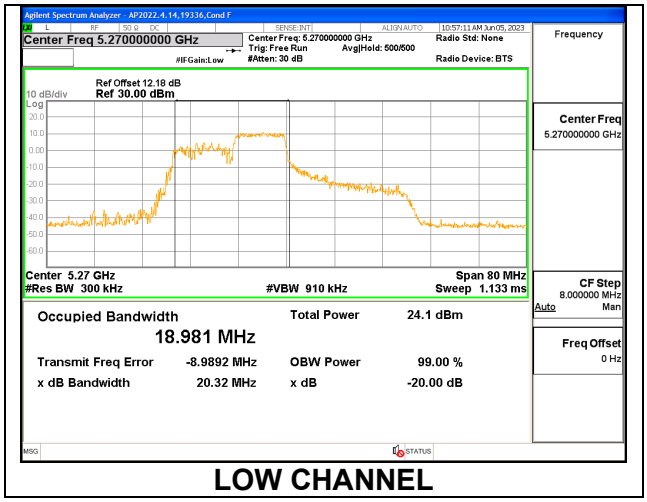
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	19.66	17.8490
High	5310	19.35	17.9000



LOW CHANNEL

1TX Antenna 5 MODE: 106 Tones, RU Index 54

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.32	18.9810
High	5310	21.72	18.7600

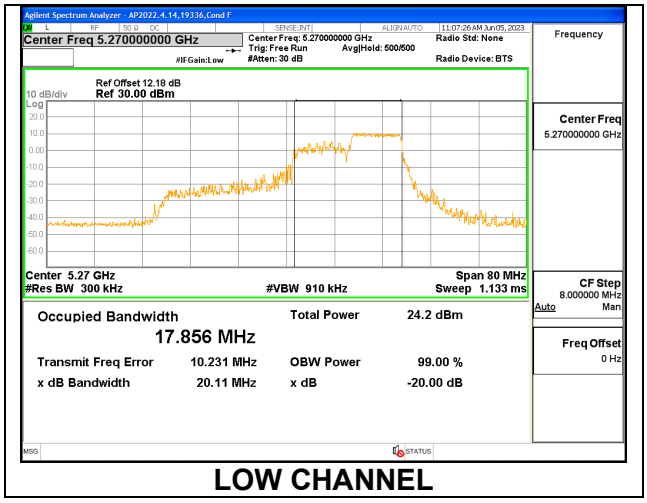


LOW CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 106 Tones, RU Index 56

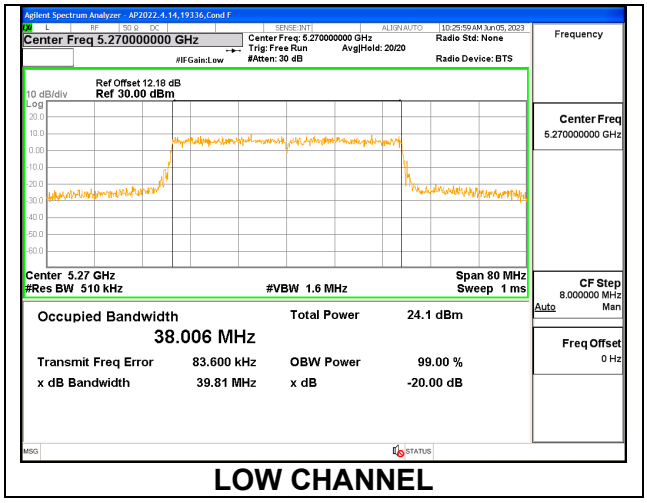
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	20.11	17.8560
High	5310	19.04	17.9230



LOW CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	39.81	38.0060
High	5310	39.59	37.9780

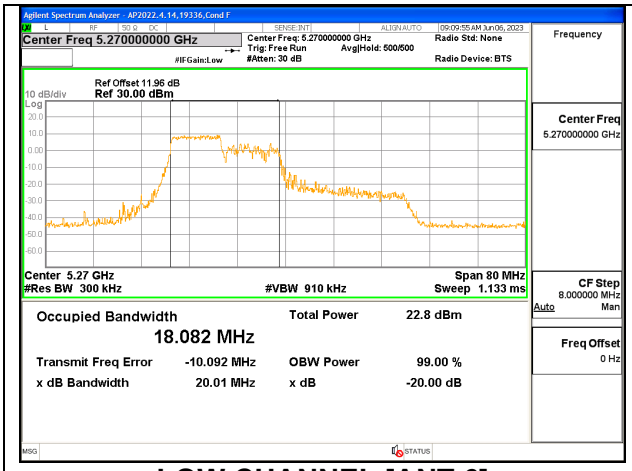


LOW CHANNEL

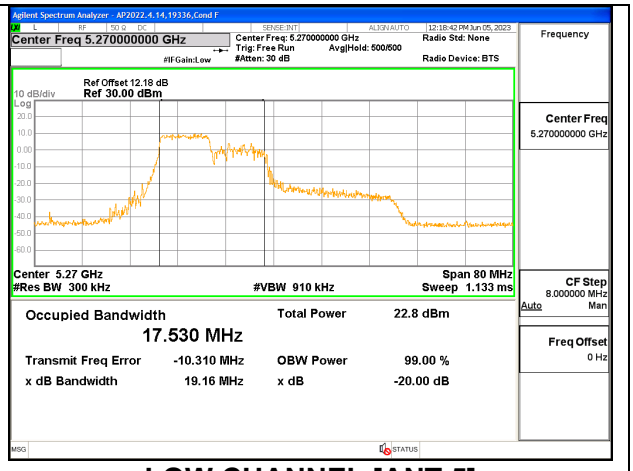
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 53

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	20.01	19.16	18.0820	17.5300
High	5310	19.84	18.87	17.5410	17.6990



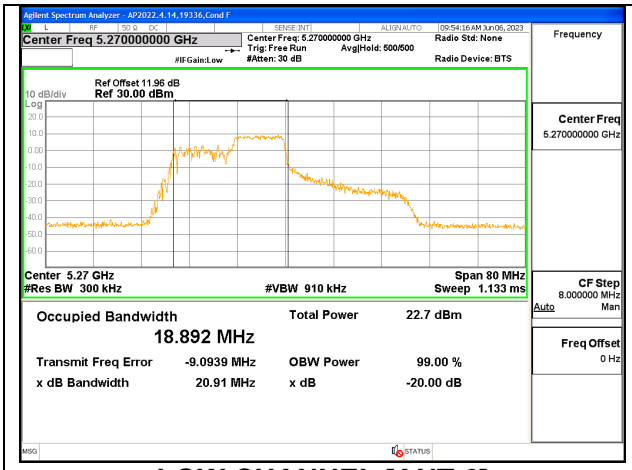
LOW CHANNEL [ANT 6]



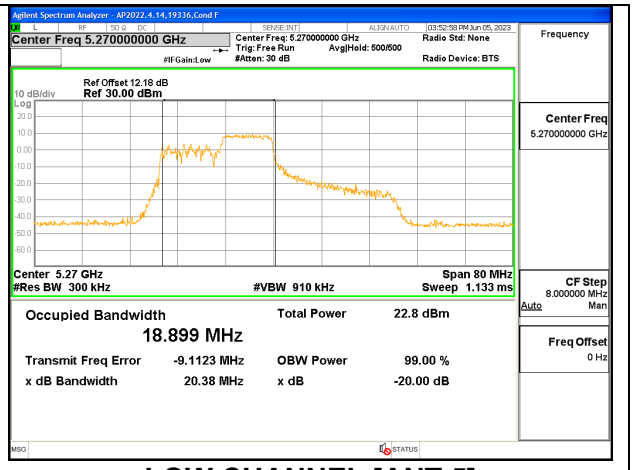
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 54

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	20.91	20.38	18.8920	18.8990
High	5310	21.74	20.60	19.1260	18.9200



LOW CHANNEL [ANT 6]

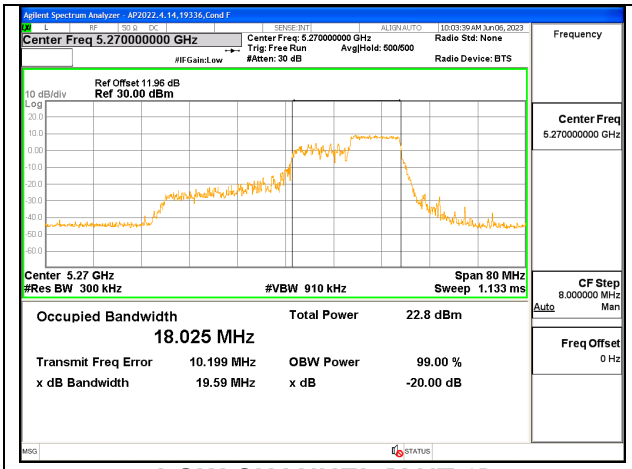


LOW CHANNEL [ANT 5]

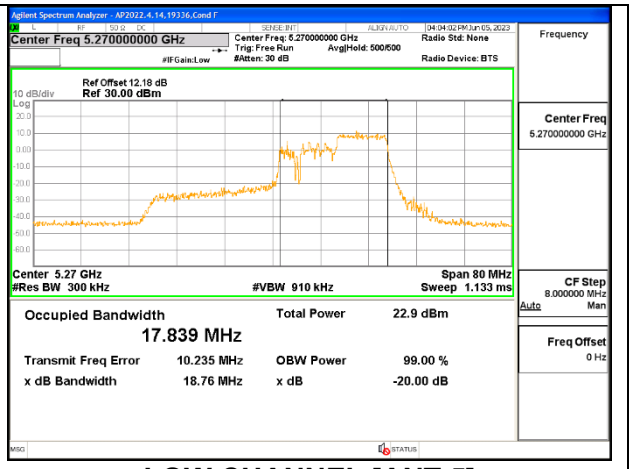
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 56

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	19.59	18.76	18.0250	17.8390
High	5310	18.84	18.78	17.8010	17.7610



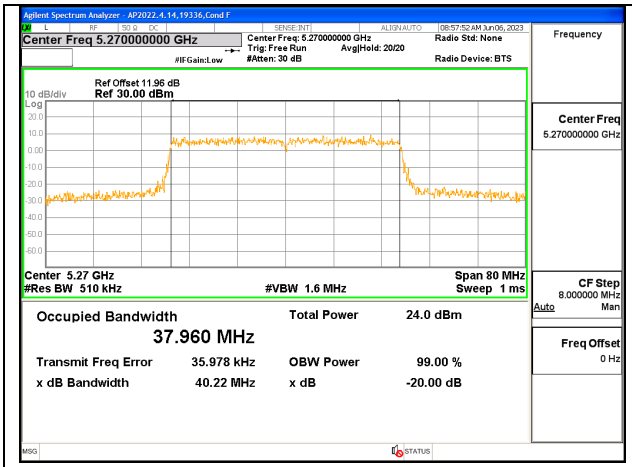
LOW CHANNEL [ANT 6]



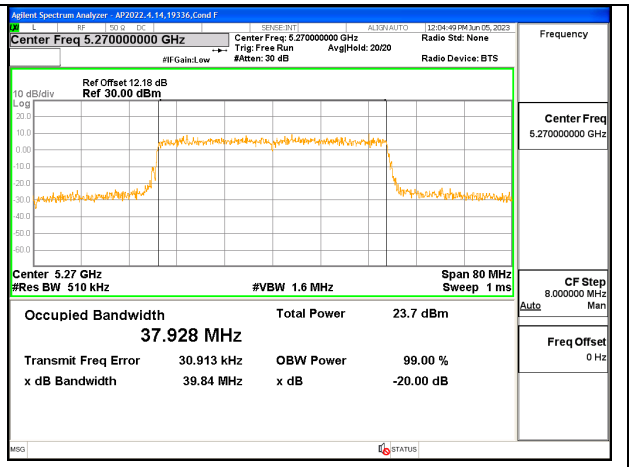
LOW CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5270	40.22	39.84	37.9600	37.9280
High	5310	39.49	39.46	38.0420	37.8350



LOW CHANNEL [ANT 6]



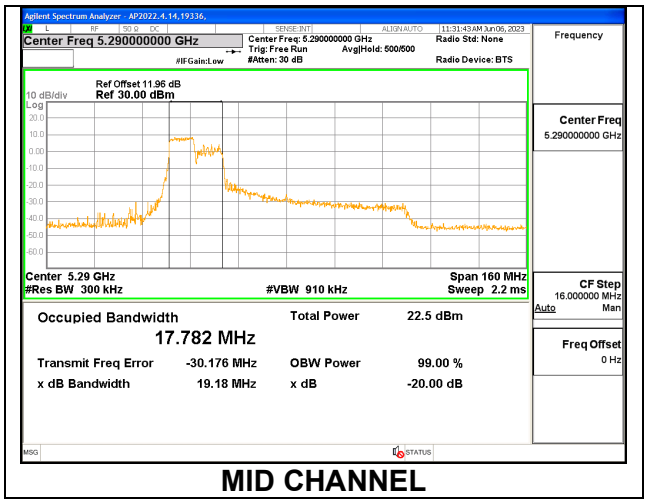
LOW CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.12. 802.11ax HE80 MODE IN THE 5.3 GHz BAND

1TX Antenna 6 MODE: 106 Tones, RU Index 53

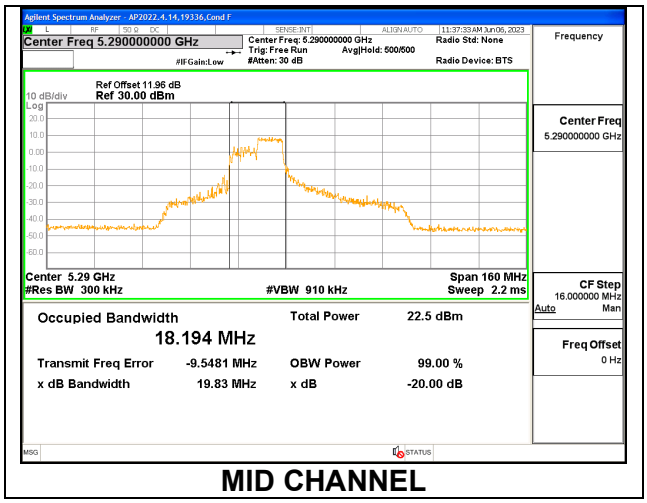
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	19.18	17.7820



MID CHANNEL

1TX Antenna 6 MODE: 106 Tones, RU Index 56

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	19.83	18.1940

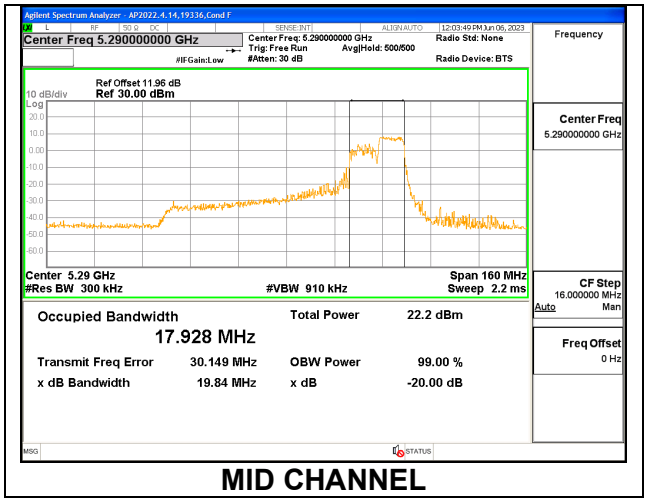


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 6 MODE: 106 Tones, RU Index 60

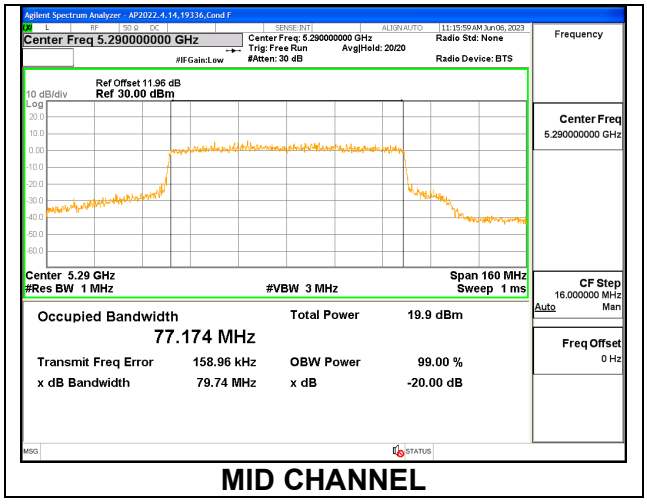
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	19.84	17.9280



MID CHANNEL

1TX Antenna 6 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	79.74	77.1740

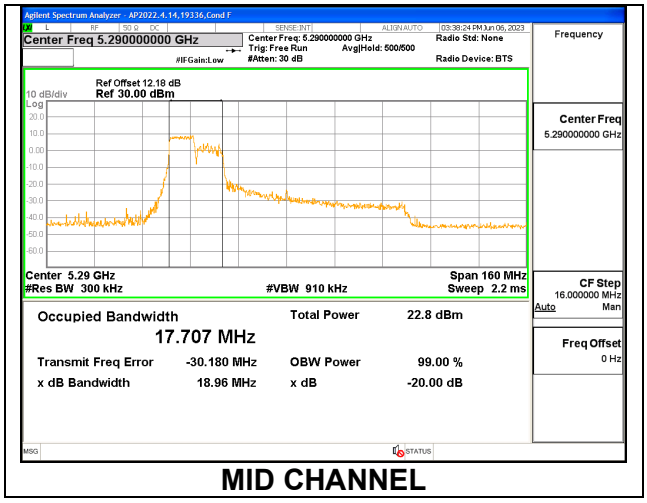


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 106 Tones, RU Index 53

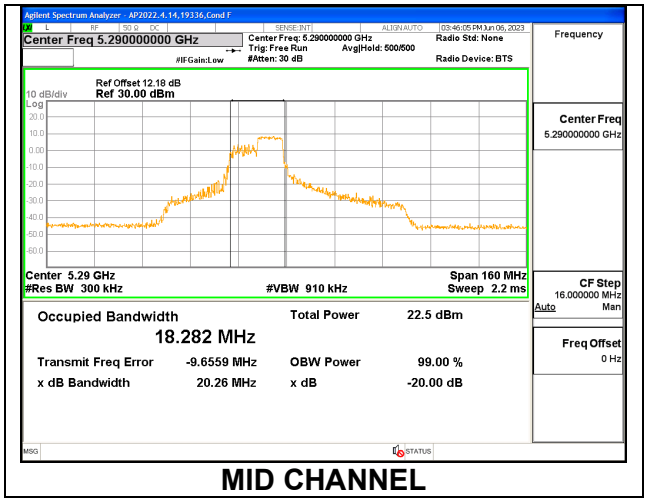
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	18.96	17.7070



MID CHANNEL

1TX Antenna 5 MODE: 106 Tones, RU Index 56

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	20.26	18.2820

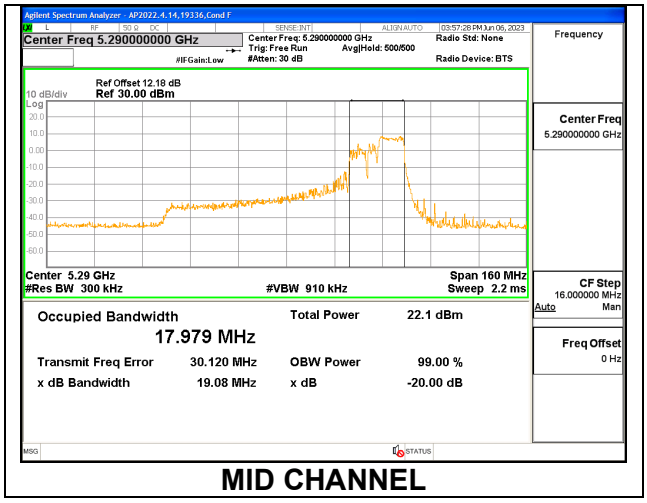


MID CHANNEL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

1TX Antenna 5 MODE: 106 Tones, RU Index 60

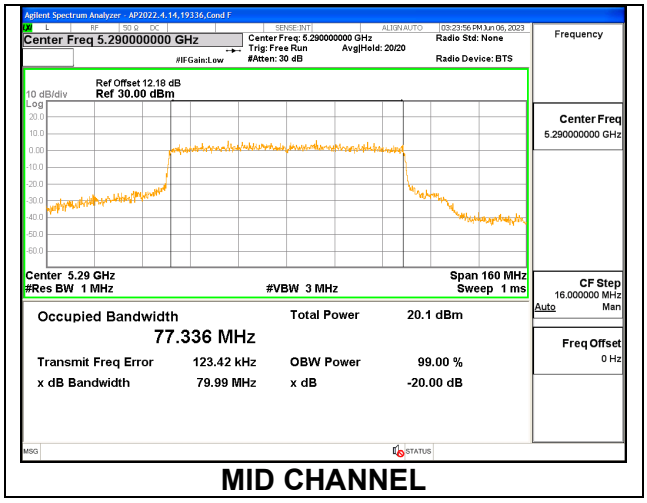
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	19.08	17.9790



MID CHANNEL

1TX Antenna 5 MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	79.99	77.3360

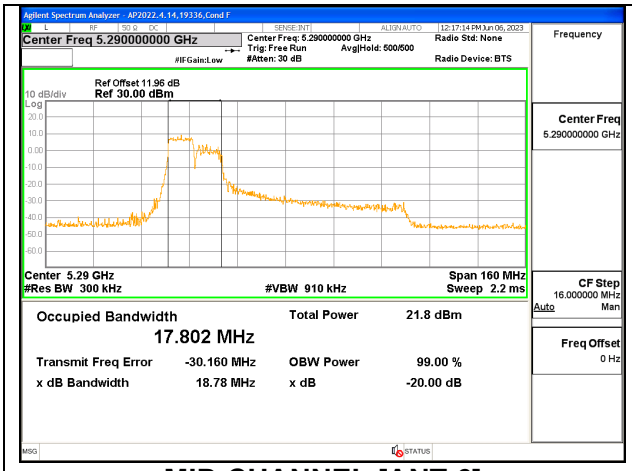


MID CHANNEL

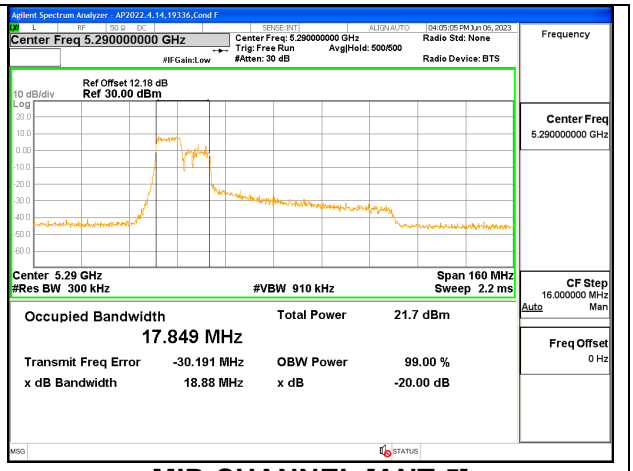
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 53

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	18.78	18.88	17.8020	17.8490



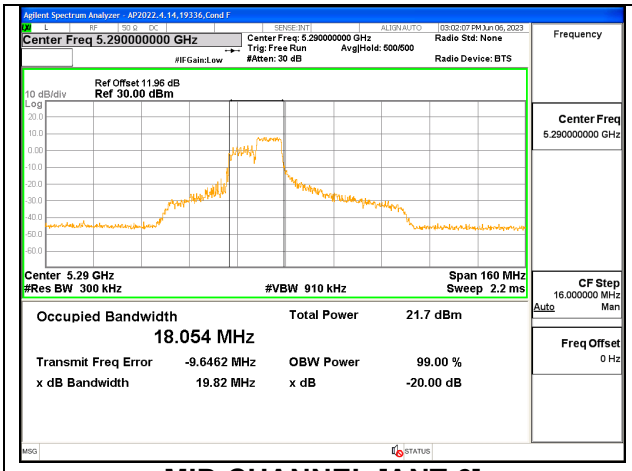
MID CHANNEL [ANT 6]



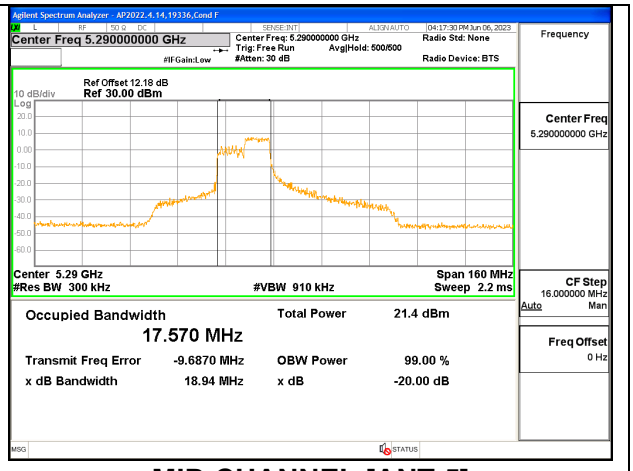
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 56

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	19.82	18.94	18.0540	17.5700



MID CHANNEL [ANT 6]

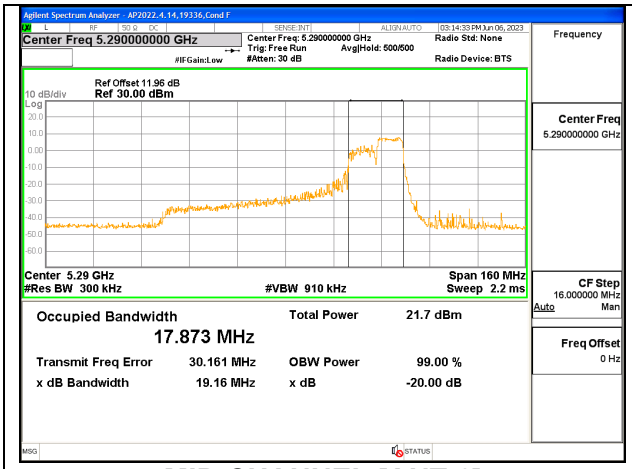


MID CHANNEL [ANT 5]

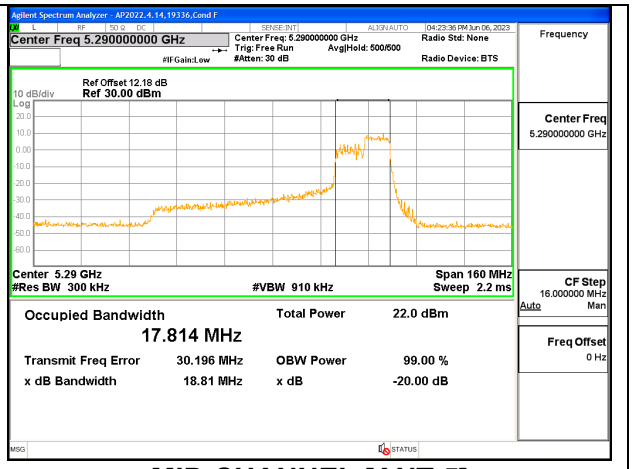
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE: 106 Tones, RU Index 60

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	19.16	18.81	17.8730	17.8140



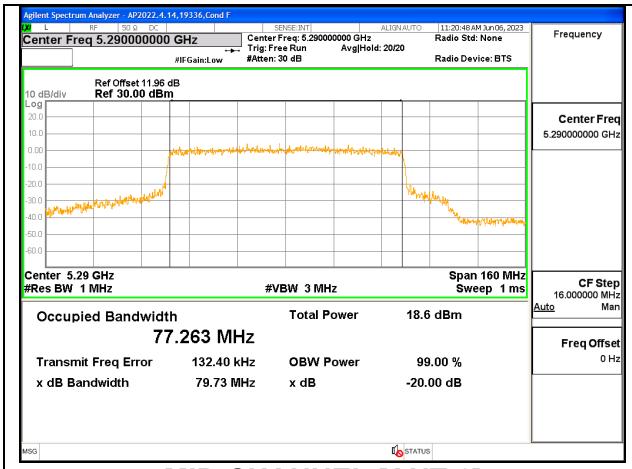
MID CHANNEL [ANT 6]



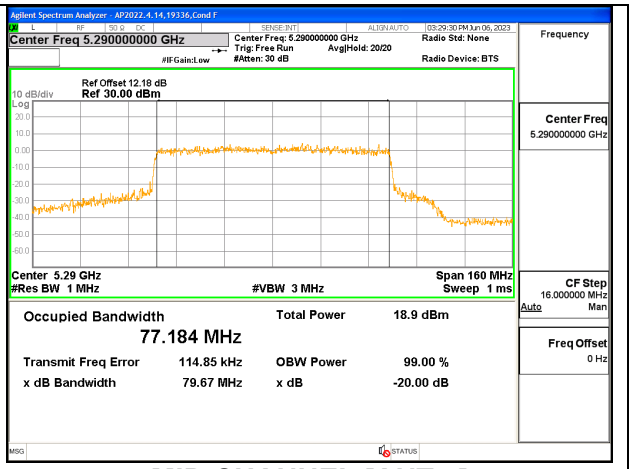
MID CHANNEL [ANT 5]

2TX Antenna 6 + Antenna 5 CDD MODE: SU Mode

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 6 (MHz)	26 dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Mid	5290	79.73	79.67	77.2630	77.1840



MID CHANNEL [ANT 6]



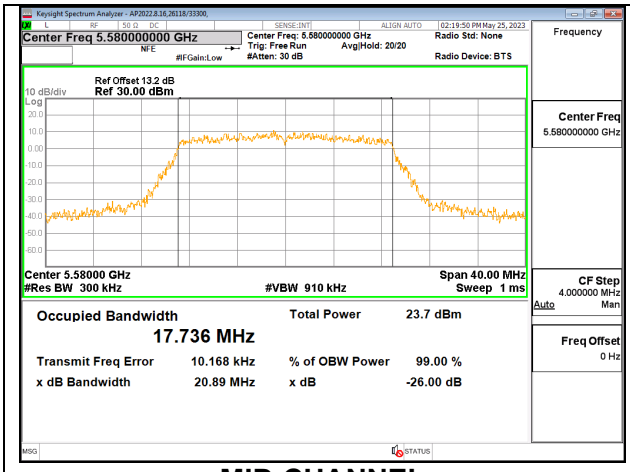
MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.13. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 6 MODE

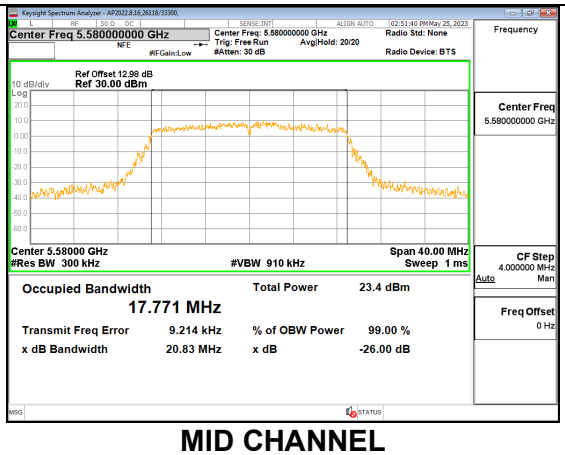
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	22.02	17.8200
Mid	5580	20.89	17.7360
High	5700	21.80	17.8570
144	5720	21.02	17.7610



MID CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	21.36	17.8640
Mid	5580	20.83	17.7710
High	5700	21.67	17.8390
144	5720	20.62	17.7990

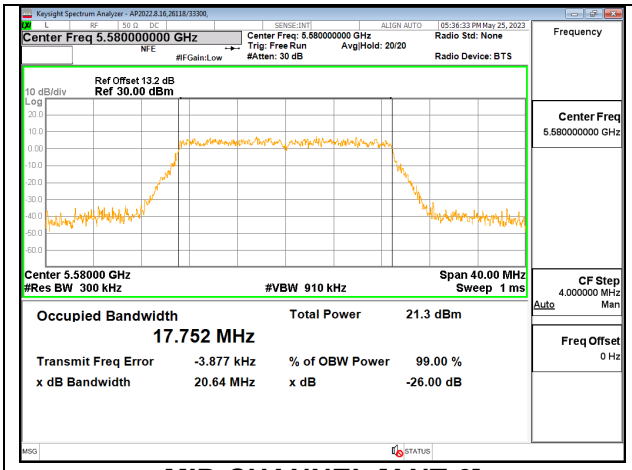


MID CHANNEL

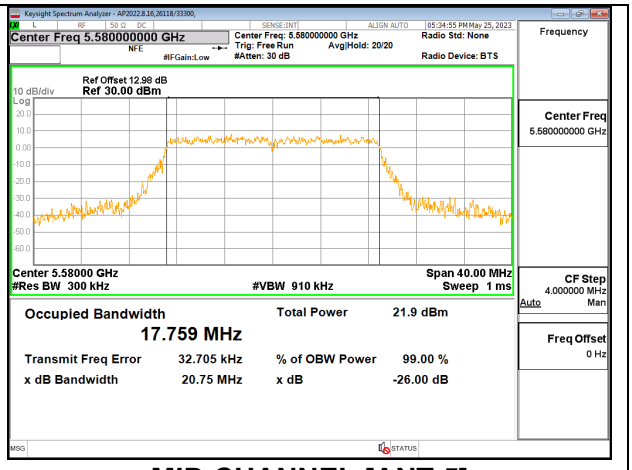
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5500	20.79	20.56	17.7550	17.8510
Mid	5580	20.64	20.75	17.7520	17.7590
High	5700	20.91	20.57	17.7830	17.8250
144	5720	21.10	20.80	17.7630	17.7530



MID CHANNEL [ANT 6]



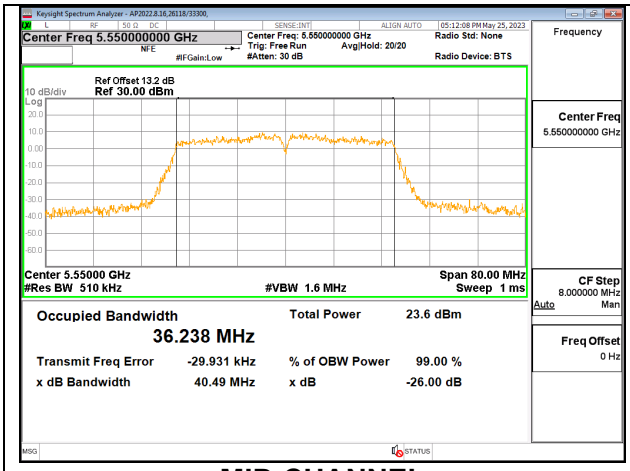
MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.14. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 6 MODE

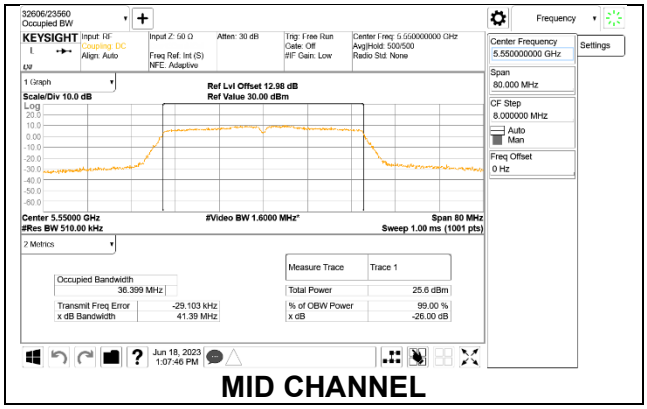
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5510	42.69	36.3160
Mid	5550	40.49	36.2380
High	5670	42.58	36.2530
142	5710	41.14	36.2150



MID CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5510	41.51	36.2700
Mid	5550	41.39	36.3990
High	5670	42.93	36.3320
142	5710	40.19	36.2100

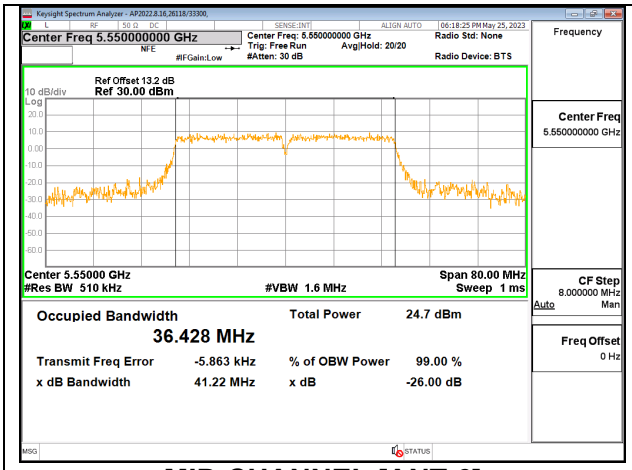


MID CHANNEL

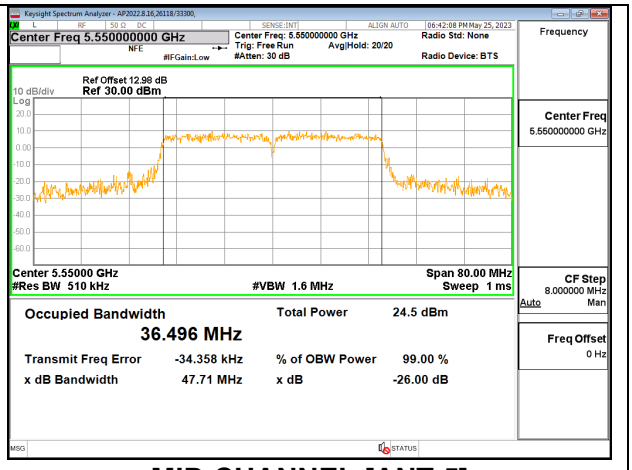
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

2TX Antenna 6 + Antenna 5 CDD MODE

Channel	Frequency (MHz)	26dB Bandwidth Antenna 6 (MHz)	26dB Bandwidth Antenna 5 (MHz)	99% Bandwidth Antenna 6 (MHz)	99% Bandwidth Antenna 5 (MHz)
Low	5510	40.99	40.21	36.3770	36.3190
Mid	5550	41.22	47.71	36.4280	36.4960
High	5670	43.92	44.08	36.3710	36.5780
142	5710	44.89	44.53	36.4460	36.5700



MID CHANNEL [ANT 6]



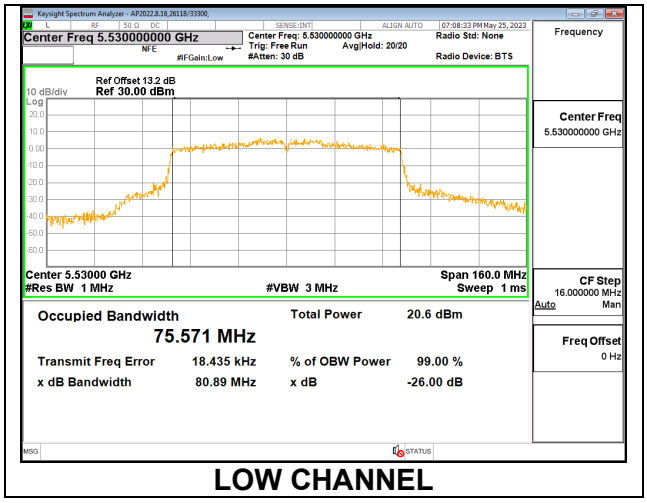
MID CHANNEL [ANT 5]

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.2.15. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 6 MODE

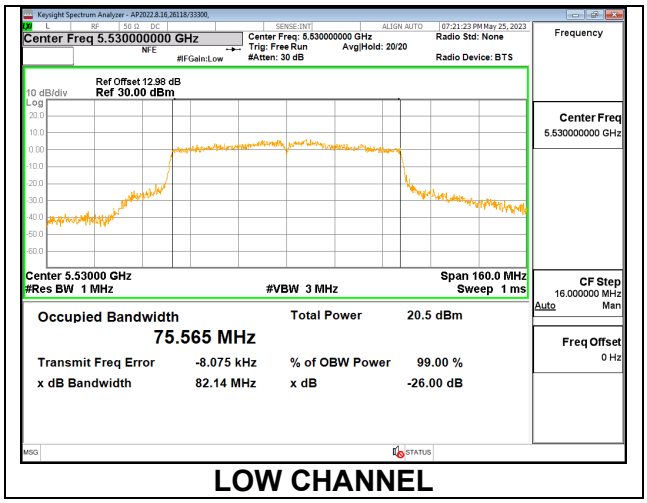
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5530	80.89	75.5710
High	5610	81.97	75.5720
138	5690	80.53	75.4900



LOW CHANNEL

1TX Antenna 5 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5530	82.14	75.5650
High	5610	82.95	75.6080
138	5690	80.25	75.5150



LOW CHANNEL

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